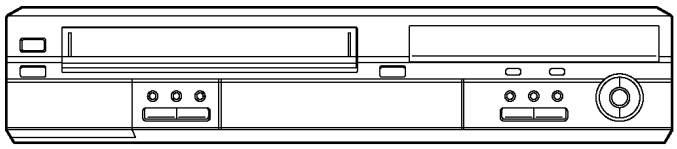
ORDER NO.VR0503001C1
B24

Service Manual

DVD Video Recorder



Note 1:
This model's DVD Drive is VXY1867.
Note 2:
This model's VHS Mechanism is R4 Mechanism Chassis for North America Model.
:Order No. VR0404003C1

DMR-ES30VP
DMR-ES30VPC

Vol.1

Colour

(S)..... .....S ilver Type

Panasonic

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Introduction

This service manual contains technical information which will allow service personnel's to understand and service this model.
Please place orders using the parts list and not the drawing reference numbers.

If the circuit is changed or modified, this information will be followed by supplement service manual to be filed with original service manual.

1) This service manual does not contain the following information, because of the impossibility of sevicing at component level.

   * Schematic Diagram, Block Diagram and P.C.B. layout of Digital P.C.B.
   * Parts List for individual parts of Digital P.C.B.
   * Exploded View and Parts List for individual parts of RAM drive.

2) The following category are recycle module part. Please send them to Central Repair Center.

   * Digital P.C.B. (ES30VP:VEP79104E, ES30VPC: RFKBES30VPC)
   * RAM drive (VXY1867)

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

CONTENTS

Page

1 Specifications ---- **5**
2 Safety precautions ---- **6**
2.1. General guidelines ---- 6
2.2. Caution for fuse replacement ---- 6
3 Prevention of Electrostatic Discharge (ESD) to Electrostatic Sensitive (ES) Devices ---- **7**
4 Precaution of Laser Diode ---- **8**
5 How to replace the Lithium Battery ---- **9**
6 Handling the Lead-free Solder ---- **9**
6.1. About lead free solder (PbF) ---- 9
7 Each Buttons ---- **10**
8 New Features ---- **12**
8.1. Quick start function (REC) ---- 12
9 (DVD) Taking out the Disc from RAM-Drive Unit when the Disc cannot be ejected by OPEN/CLOSE button ---- **13**
9.1. (DVD) Forcible Disc Eject ---- 13
9.2. (DVD) When the Forcible Disc Eject can not be done. ---- 13
10 (VHS) Removing Cassette Tape manually ---- **14**
10.1. (VHS) Removal by compulsory unloading. ---- 14
10.2. (VHS) Removal by manual operation by rotating the Loading Motor with the batteries. ---- 14
10.3. (VHS) Take out Cassette Tapemanually after removing the mechanism ---- 15
11 (DVD) Service Explorer ---- **16**
12 (DVD) Self-Diagnosis and Special Mode Setting ---- **19**
12.1. (DVD) Self-Diagnosis Functions ---- 19
12.2. (DVD) Special Modes Setting ---- 20
12.3. (DVD) Service Modes ---- 21
13 (VHS) Self-Diagnosis and Special Mode Setting ---- **25**
13.1. (VHS) Self-Diagnosis Functions ---- 25
13.2. (VHS) Special Modes Setting ---- 26
13.3. (VHS) Service Modes ---- 26
13.4. (VHS) Self-Diagnosis History Memory Function ---- 27
13.5. (VHS) Description of Self Diagnosis Memory ---- 29
14 Assembling and Disassembling ---- **31**
14.1. Disassembly Flow Chart ---- 31
14.2. P.C.B. Positions ---- 32
14.3. Caution with inserting cassette tape when disassembling the unit ---- 32
14.4. Top Case ---- 33
14.5. Front Panel ---- 33
14.6. Front Jack P.C.B. & FL Drive P.C.B. ---- 34
14.7. Power Unit and Power P.C.B., Rear Panel & Fan Motor ---- 34
14.8. VTR Mechanism Unit ---- 36
14.9. Main P.C.B. ---- 37
14.10. DVD-RAM Drive ---- 37

Page

14.11. Digital P.C.B. ---- 37
14.12. Digital I/F P.C.B. ---- 38
15 Service Fixture and Tools ---- **39**
16 Service Positions ---- **40**
16.1. Checking and Repairing of Power P.C.B. ---- 40
16.2. Checking and Repairing of & Digital I/F P.C.B. ---- 41
16.3. Checking and Repairing of Main P.C.B. ---- 42
16.4. Checking and Repairing of Digital P.C.B. ---- 43
16.5. Checking and DVD-RAM Drive ---- 44
17 (Power P.C.B.) Caution after replacing parts ---- **45**
18 (DVD) Caution after parts replacing parts ---- **45**
18.1. (DVD) After replacing the RAM Drive with new one ---- 45
18.2. (DVD) When the unit does not operate normally after replacing the Timer Microprocessor or Main P.C.B. ---- 45
19 (VHS) Caution after replacing parts ---- **46**
19.1. (VHS) Adjustment Procedures after replacing DD Cylinder, VHS Microprocessor or Main P.C.B. ---- 46
19.2. (VHS) X-VALUE & LINEARITY (P2 and P3 Posts) ADJUSTMENT ---- 47
19.3. (VHS) Caution after replacing VHS Microprocessor (IC6001) ---- 48
20 (DVD) Standard Inspection Specifications after Making Repairs ---- **49**
21 Voltage and Waveform Chart ---- **50**
21.1. Power P.C.B. ---- 50
21.2. Digital I/F P.C.B. ---- 50
21.3. Main P.C.B. ---- 51
21.4. FL Drive P.C.B. ---- 53
21.5. Front Jack P.C.B. ---- 54
21.6. P9001 Connector ---- 54
21.7. Waveform ---- 55
22 Abbreviations ---- **57**
22.1. DVD ---- 57
22.2. VHS ---- 59
23 Block Diagram ---- **63**
23.1. Power Supply Block Diagram ---- 63
23.2. Digital I/F Regulator Block Diagram ---- 64
23.3. Digital I/F Timer Block Diagram ---- 65
23.4. System Control & Servo Block Diagram ---- 66
23.5. Audio Block Diagram ---- 67
23.6. Video Block Diagram ---- 68
24 Schematic Diagram ---- **71**
24.1. Interconnection Schematic Diagram ---- 71
24.2. Main Power Supply Schematic Diagram ---- 73
24.3. Sub Power Section (Digital I/F P.C.B.(1/3)) Schematic Diagram (SP) ---- 74

24.4. Digital I/F Section (Digital I/F P.C.B.(2/3)) Schematic Diagram (IF) ---- 75
24.5. DVD Output Section (Digital I/F P.C.B.(3/3)) Schematic Diagram (DO) ---- 78
24.6. I/O Tuner Section (Main P.C.B.(1/4)) Schematic Diagram (I) ---- 79
24.7. Syscon/Servo/Timer Section (Main P.C.B.(2/4)) Schematic Diagram (S) ---- 83
24.8. Video Section (Main P.C.B.(3/4)) Schematic Diagram (V) ---- 85
24.9. VHS Audio Section (Main P.C.B.(4/4)) Schematic Diagram (A) ---- 87
24.10. FL Drive Schematic Diagram ---- 88
24.11. Front Jack Schematic Diagram ---- 89
25 Print Circuit Board ---- 91
25.1. Power P.C.B ---- 91
25.2. Digital I/F P.C.B ---- 92
25.3. Main P.C.B. ---- 94
25.4. Front Jack P.C.B. , FL Drive P.C.B ---- 99
26 Exploded Views ---- 101
26.1. Casing Parts & Mechanism Section 1 ---- 101
26.2. Casing Parts & Mechanism Section 2 ---- 102
26.3. VHS Mechanism Section ---- 103
26.4. Packing & Accessories Section ---- 104
27 Replacement Parts List ---- 105

1 Specifications

Specifications

Power Supply		AC 120 V ±10%, 50/60 Hz ±10%
Power Consumption		31 W (Approx. 10 W in Quick start stand by mode / Approx. 9 W in power save mode) (Approx. 4 W in Normal stand by mode / Approx. 2 W in power save mode)
DVD	**DVD Recording format:**	DVD-RAM: DVD Video Recording format DVD-R,DVD-RW: DVD Video format Video: MPEG2 Audio: Dolby Digital 2CH
	Optical pickup:	System with 1 lens, 2 integration units (wavelength: 662 nm for DVD, 795 nm for CD)
	Recording disc:	DVD-RAM: Ver 2.0 DVD-RAM: Ver 2.1 /3X-SPEED DVD-RAM Revision 1.0 DVD-RAM: Ver 2.2 /5X-SPEED DVD-RAM Revision 2.0 DVD-R: for General ver 2.0 DVD-R: for General ver 2.0 /4X-SPEED DVD-R Revision 1.0 DVD-R: for General ver 2.x /8X-SPEED DVD-R Revision 3.0 DVD-RW: Ver 1.1 DVD-RW: Ver 1.1 /2X-SPEED DVD-RW Revision 1.0 DVD-RW: Ver 1.2 /4X-SPEED DVD-RW Revision 2.0 +R: Ver 1.0 +R: Ver 1.1 +R: Ver 1.2
	Recording mode/ recording time:	XP: approx. 10 Mbps/ approx. 60 min SP: approx. 5 Mbps/ approx. 120 min LP: approx. 2.5 Mbps/ approx. 240 min EP: approx. 1.7/1.2 Mbps/approx. 360/480 min (with 4.7 GB disc)
	Playable discs:	DVD-RAM, DVD-R, DVD-RW, +R, +RW DVD-Video, DVD-Audio, Video CD, CD-Audio (CD-DA), CD-R/RW (MP3, CD-DA, Video CD, JPEG formatted discs)
	Others:	Region code : 1
	Video interface Output:	**Phono:** CVBS: 1 Vp-p Zout: 75 ohm **S-Video:** Y: 1 Vp-p, C: 0.286 Vp-p Zout: 75 ohm **RCA (YPBPR):** Y: 1 Vp-p, PB: 0.7 Vp-p, PR: 0.7 Vp-p Zout: 75 ohm
	Audio interface:	**Input:** **L1: Phono:** Standard: 309m Vrms, FS: 2 Vrms at 1 kHz Zin: 22 k ohm **L2: Phono:** Standard: 309m Vrms, FS: 2 Vrms at 1 kHz Zin: 22 k ohm **Output:** **Phono:** Standard: 309m Vrms, FS: 2 Vrms at 1 kHz Zout: less than 1 k ohm ,Load: 10kohm **Digital Audio:** Optical Output connector (PCM, Dolby Digital, DTS)
	Video data:	**Horizontal resolution:** More than XP: 500 lines SP: 500 lines LP: 500 lines EP: 250 lines **Signal to Noise Ratio:** More than 45 dB **Frequency Response:** XP, SP: 0±3 dB at 4 MHz (0 dB at 0.1 MHz), (Fine mode) LP, EP: 0±3 dB at 2 MHz (0 dB at 0.1 MHz), (Fine mode)
	Audio data:	**Dynamic Range:** Rec/PB: more than 90 dB DVD-Video PB (with LPCM): more than 96 dB CD PB: more than 96 dB **Frequency Response:** XP, SP, LP, EP (6H mode): 20 Hz–20 kHz (0±3 dB) EP (8H mode): 20 Hz–12 kHz (0±3 dB) **Cross Talk:** More than 60 dB at 1 kHz

LASER Spec.	**Class 1 LASER Product**	**Wave Length:** 795 nm, 662 nm **Laser Power:** No hazardous radiation is emitted with safety protection
VHS	**Recording format:**	VHS Video Cassette System Standard with FM audio
	Heads:	4 helical scan heads for video 2 helical scan heads for FM audio 1 fixed head for Normal audio
	Recording modes/ recording time:	NTSC SP: 33.35 mm/s, 120min NTSC EP: 11.12 mm/s, 360 min (with T-120 cassette)
	others:	FF/RW: approx. 54 s, Jet RW: approx. 36 s (with T-120 cassette)
	Audio interface:	**Input:** **L1:** **Phono:** 309mVrms Zin: 22 kohm **L2:** **Phono:** 309mVrms Zin: 22 kohm
	Video data:	**Horizontal resolution:** More than 200 lines **Signal to Noise Ratio:** More than SP: 40 dB EP: 40 dB **Frequency Response:** SP, EP: -4.5–4.0 dB at 2 MHz (0 dB at 0.1 MHz)
	Audio data:	**Dynamic Range:** HiFi: more than 90 dB **Frequency Response:** HiFi: 20 Hz–20 kHz (0±3 dB) Normal SP: 80 Hz–8 kHz (0±4 dB) Normal EP: 80 Hz–4 kHz (-1±5 dB) **Signal to Noise Ratio:** HiFi: more than 65 dB Normal SP: more than 43 dB Normal EP: more than 41 dB **Cross Talk:** More than 50 dB at 1 kHz (HiFi) **Wow and Flutter:** HiFi: less than 0.005 Wrms Normal SP: 0.2% max Normal EP: 0.4% max
DVD / VHS Common	**Video interface:**	**TV system:** NTSC **Input:** **L1:** **Phono:** CVBS: 1 Vp-p, Zin: 75 ohm **S-Video:** Y: 1 Vp-p, C: 0.286 Vp-p, Zin: 75ohm **L2:** **Phono:** CVBS: 1 Vp-p Zin: 75 ohm **S-Video:** Y: 1 Vp-p, C: 0.286 Vp-p, Zin: 75ohm **Output:** **Phono:** CVBS: 1 Vp-p, Zout: 75 ohm
	Audio interface:	**Output:** **Phono:** **DVD:** Standard: 309mVrms, FS: 2Vrms at 1kHz Zout: less than 1 k ohm, Load: 10kohm **VHS:** 309mVrms, Zout: less than 1 k ohm, Load: 10kohm
	Tuner RF:	**Tuner system:** NTSC-M **Channel coverage:** VHF: 2ch–13 ch 75 ohm UHF: 14ch–69ch 75 ohm CATV: 5A&A-5ch–EEEch 75 ohm One tuner (DVD and VCR common use) **RF converter:** 3 / 4ch 75ohm
Dimensions (W)X(H) X(D)		Approx. 430 × 89 × 352 mm
Mass		Approx. 5.8 kg
Operating Temperature		5 ° C–40 ° C
Operating Humidity		35%–80% RH (no condensation)
Solder		This model uses lead free solder (PbF).

Notes: Mass and dimensions are approximate.

Specifications are subject to change without notice.

2 Safety precautions

2.1. General guidelines

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

2.1.1. Leakage current cold check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1MΩ and 5.2MΩ.
   When the exposed metal does not have a return path to the chassis, the reading must be ∞.

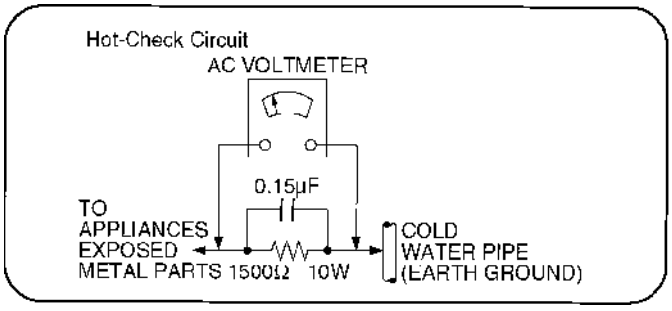


Figure 1

2.1.2. Leakage current hot check (See Figure 1 .)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5kΩ, 10 watts resistor, in parallel with a 0.15μF capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliampere. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

2.2. Caution for fuse replacement

(For English)
CAUTION:
Replace with the same type fuse:
(Manufacturer: Hollyland, Type:50T,2A, 250V)

(For Canadian French)
ATTENTION:
Utiliser un fusible de rechange de même type:
(Fabricant: Hollyland, Type: 50T, 2A, 250V)

3 Prevention of Electrostatic Discharge (ESD) to Electrostatic Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatic Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistor-sand semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   Caution

   Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise hamless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device).

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are imporant for safety.
These parts are marked by ⚠ in the schematic diagrams, Exploded Views and replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

4 Precaution of Laser Diode

CAUTION:

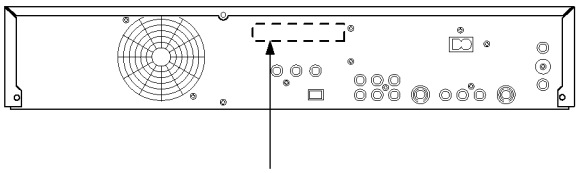
This product utilizes a laser diode with the unit turned “on”, invisible laser radiation is emitted from the pickup lens.
Wave length: 662 nm (DVDs)/795 nm (CDs)
Maximum output radiation power from pickup: 100 μ W/VDE
Laser radiation from the pickup lens is safety level,but be sure the followings:

1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

ACHTUNG:

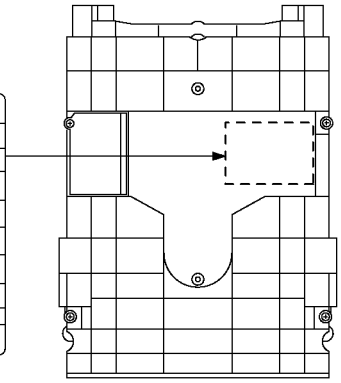
Dieses Produkt enthält eine Laserdiode.
Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit abgestrahlt.
Wellenlänge: 662 nm (DVDs)/795 nm (CDs)
Maximale Strahlungsleistung der Lasereinheit: 100 μ W/VDE
Die Strahlung der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinheit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlinse blicken.
4. Nicht über längere Zeit in die Fokussierlinse blicken.



Product complies with DHHS Rules 21 CFR Subchapter J in effect at date of manufacture.
Matsushita Electric Industrial Co., Ltd.
Kadoma, Osaka, Japan

DANGER	– VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM. (FDA 21 CFR)
CAUTION	– VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM. (IEC60825-1)
ATTENTION	– RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE. EXPOSITION DANGEREUSE AU FAISCEAU.
ADVARSEL	– SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO!	– AVATTAESSA OLET ALTTIINA NÄKYVÄÄ JA NÄKYMÄTÖN LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING	– SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. BETRAKTA EJ STRÅLEN.
ADVARSEL	– SYNLIG OG USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES. UNNGÅ EKSPONERING FOR STRÅLEN.
VORSICHT	– SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.
注 意	– 打开时有可见及不可见激光辐射。避免激光束照射。
注 意	– ここを開くと可視及び不可視のレーザー光が出ます。ビームを直視見たり、触れたりしないでください。 RQLS0233



CAUTION!
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

5 How to replace the Lithium Battery

REPLACEMENT PROCEDURE

1. Remove the Top case and DVD-RAM drive unit with Main P.C.B. by referring the Disassemblin g Procedure.
2. Unsolder the Lithium Batteries: B7751 and then replace it into new one.
   (As shown in 24.2.3. The Main P.C.B.)

NOTE:

The lithium battery is a critical component. (Type No.: CR2354-1GUF Manufactured by Panasonic.)

It must never be subjected to excessive heat or discharge.

It must therefore only be fitted in equipment designed specifically for its use.

Replacement batteries must be of the same type and manufacture.

They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.

Do not attempt to re-charge the old battery or re-use it for any other purpose.

It should be disposed of in waste products destined for burial rather than incineration.

(For English)

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the equipment manufacturer.
Discard used batteries according to manufacturer's instructions.

(For French)

PRECAUTION

Le fait de remplacer incorrectement la pile peut présenter des risques d'explosion.
Remplacer la pile uniquement par une pile identique ou de type équivalent recommandée par le fabricant. Se débarrasser des piles usagées conformément aux instructions du fabricant.

6 Handling the Lead-free Solder

6.1. About lead free solder (PbF)

Distinction of PbF P.C.B.:

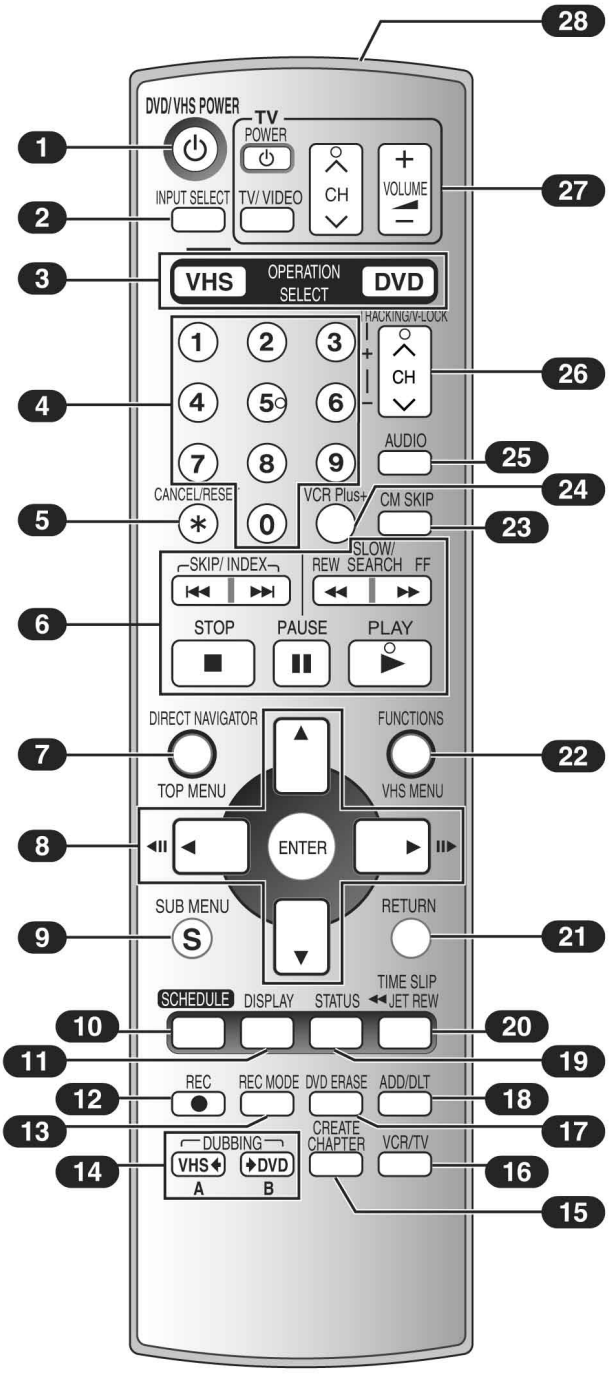
P.C.B.s (manufactured) using lead free solder will have a PbF stamp on the P.C.B.

Caution:

- Pb free solder has a higher melting point than standard solder; Typically the melting point is 50 - 70°F (30 - 40°C) higher. Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 700 ± 20°F (370 ± 10°C).
- Pb free solder will tend to splash when heated too high (about 1100°F/600°C).
- When soldering or unsoldering, please completely remove all of the solder on the pins or solder area, and be sure to heat the soldering points with the Pb free solder until it melts enough.

7 Each Buttons

Remote control



■ **[VHS] and [DVD] button**

[DVD]

- Before performing DVD operations, be sure to press the [DVD] button. Also, make sure the DVD indicator lights up on the unit.

[VHS]

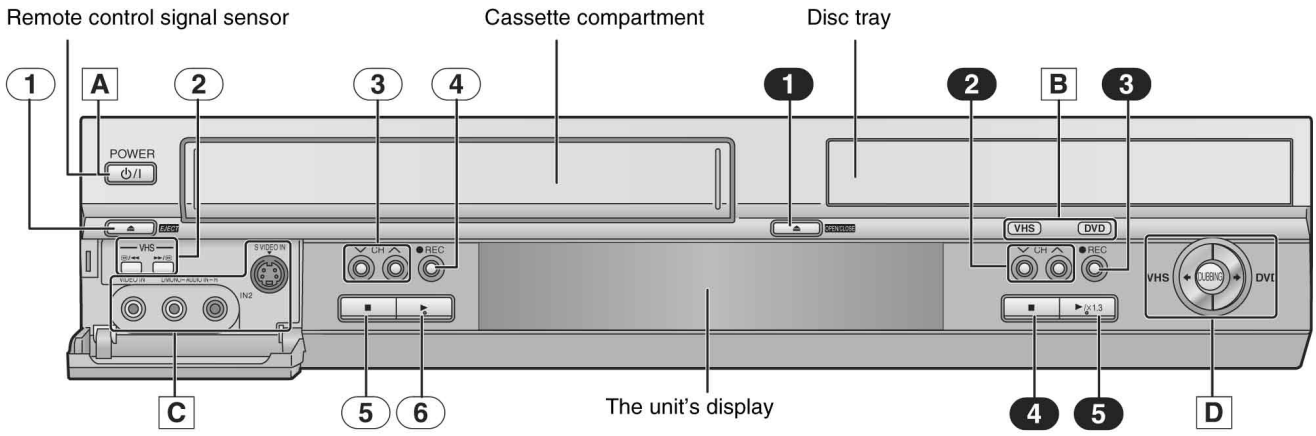
- Before performing VHS operations, be sure to press the [VHS] button. Also, make sure the VHS indicator lights up on the unit.

1. **Turn the unit on**
2. **Input select (IN1, IN2, TP or DC)**
3. **Select drive (DVD or VHS) . . . . . ➜ above**
4. **Select channels and title numbers etc./Enter numbers**
5. **Cancel/Reset the tape counter**
6. **Basic operations for recording and play**
7. **Show Top menu/Direct Navigator**
8. **Selection/Enter, Frame-by-frame**
9. **Show sub menu**
10. **Show scheduled recording list**
11. **Show on-screen menu**
12. **Start recording**
13. **Change recording mode**
14. **One touch transfer (dub) (◗ DVD, VHS ◖)**
    View select (A, B)
15. **Create chapters**
16. **Select VCR/TV**
17. **Erase items**
18. **Add/delete channel**
19. **Show status messages**
20. **Skip the specified time/**
    Display the TV image as a picture-in-picture
    Jet rewind button (JET REW)
21. **Return to previous screen**
22. **Show FUNCTIONS window**
    Show VHS menu
23. **Skip a minute forward**
24. **Show VCR Plus+ screen**
25. **Select audio**
26. **Channel select/**
    TRACKING/V-LOCK
27. **TV operations**
28. **Transmission window**

Note

- Buttons such as the [●, REC] button do not protrude as much as other buttons to stop them from being pressed accidentally.
- The word “button” is not used in these operating instructions so “Press the [ENTER] button.” is shown as “Press [ENTER].”
- You can use this remote control to operate your TV if you set the TV manufacturer code.

Main unit



Common to DVD/VHS

A DVD/VHS POWER on/off button (⏻/I, POWER)
- To switch the unit from on to standby mode or vice versa. In the standby mode, the unit is still consuming a small amount of power.

B DVD/VHS drive indicator
- Lights when the DVD or VHS drive is selected.

C IN2 input terminals (IN2)

D One Touch Transfer (Dubbing) operation button
- **From VHS to DVD**
- **From DVD to VHS**

VHS

1 Cassette eject button (⏏, EJECT)
2 VHS Search buttons (⏮/◀◀, ▶▶/⏭)
3 VHS Channel up/down buttons (CH, ∧, ∨)
4 VHS Recording button (●, REC)
5 VHS Stop button (■)
6 VHS Play button (▶)

DVD

1 Disc tray open/close button (⏏, OPEN/CLOSE)
2 DVD Channel up/down buttons (CH, ∧, ∨)
3 DVD Recording button (●, REC)
4 DVD Stop button (■)
5 DVD Play/×1.3 button (▶/×1.3)

■ Off Timer

The unit automatically switches to standby when it has not been used for about 6 hours.
You can turn this feature off or change the time to 2 hours.

8 New Features

The description concerning HDD is applied only to models with HDD.

8.1. Quick start function (REC)

1. General

A few seconds after tuning on the unit,you can start recording to DVD-RAM,HDD.

You can switch the operation of this function (ON/OFF) on the menu screen. .

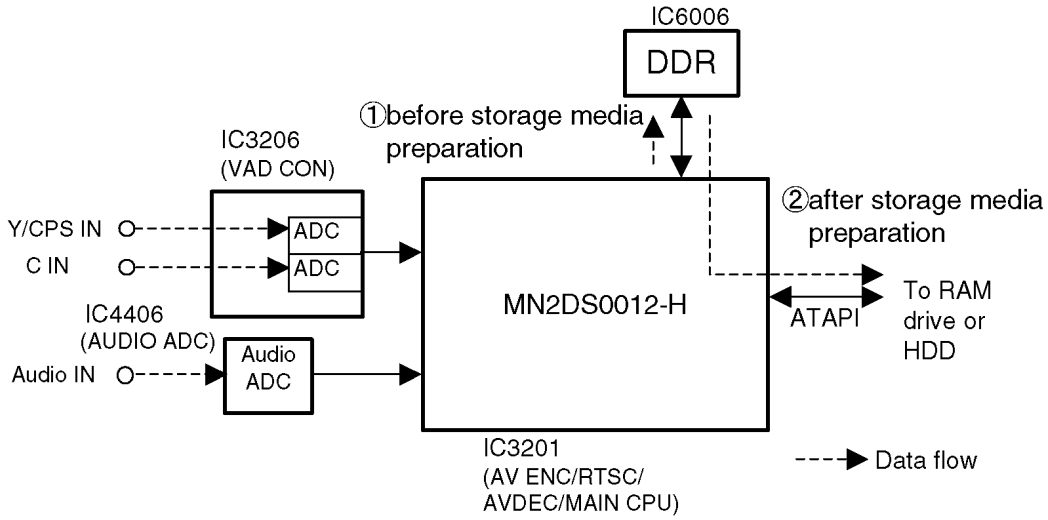
2. Quick start(REC) principle

In the power-off at Quick start, only power supplies for video IC,tuner and storage media are cut off.

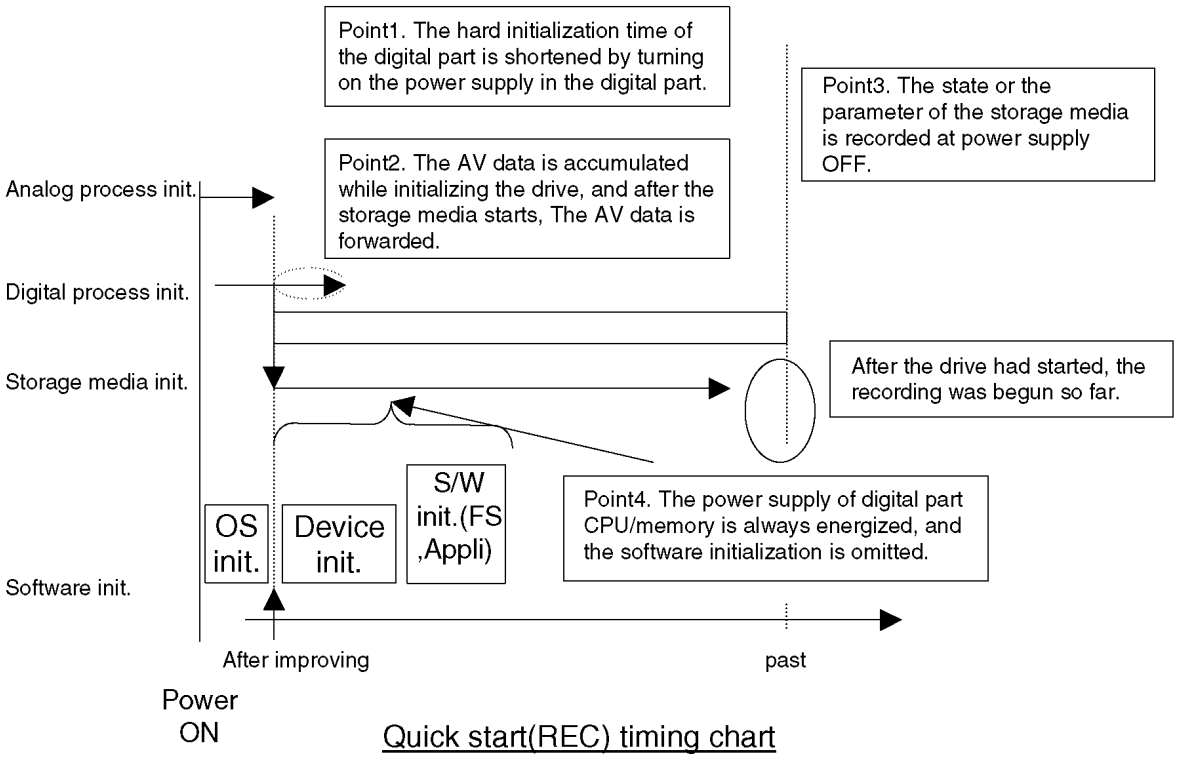
①When the REC button is pushed a few second after the power button is pushed, Audio and Video data are stored in DDR SDRAM before a storage media(DVD-RAM or HDD) preparation.

*Preparation time → DVD-RAM: Fabout 8seconds

②After a storage media(DVD-RAM or HDD) preparation,Audio and Video data are transfer from DDR SDRAM to the storage media.



Quick start(REC) explanation chart


Point1. The hard initialization time of the digital part is shortened by turning on the power supply in the digital part.
Point3. The state or the parameter of the storage media is recorded at power supply OFF.
Point2. The AV data is accumulated while initializing the drive, and after the storage media starts, The AV data is forwarded.
Analog process init.
Digital process init.
Storage media init.
After the drive had started, the recording was begun so far.
S/W init.(FS ,Appli)
Point4. The power supply of digital part CPU/memory is always energized, and the software initialization is omitted.
OS init.
Device init.
Software init.
After improving
past
Power ON

Quick start(REC) timing chart

9 (DVD) Taking out the Disc from RAM-Drive Unit when the Disc cannot be ejected by OPEN/CLOSE button

9.1. (DVD) Forcible Disc Eject

9.1.1. (DVD) When the power can be turned off.

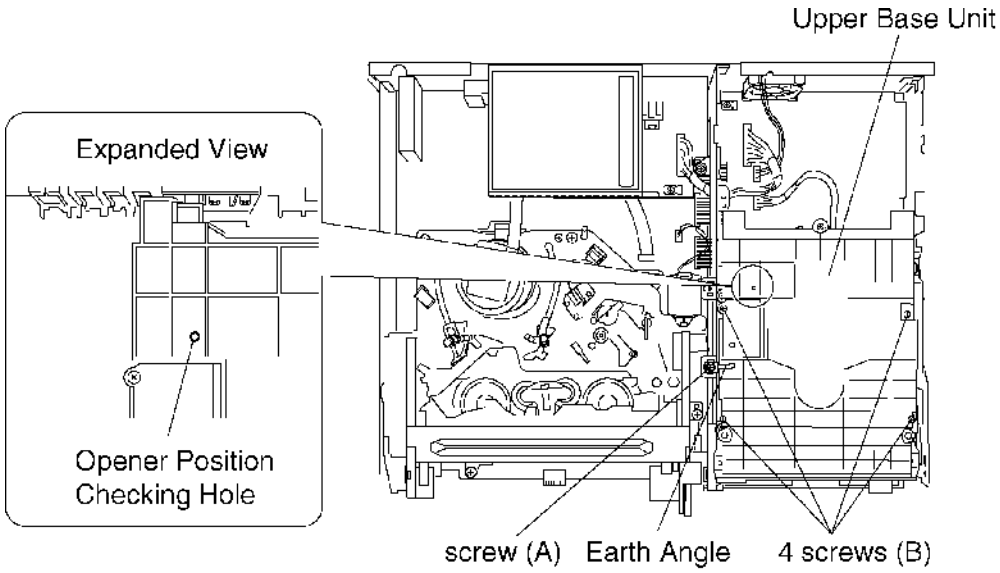
1. Turn off the power and press [(DVD) STOP], [(DVD) CH UP] keys on the front panel simultaneously for 5 seconds.

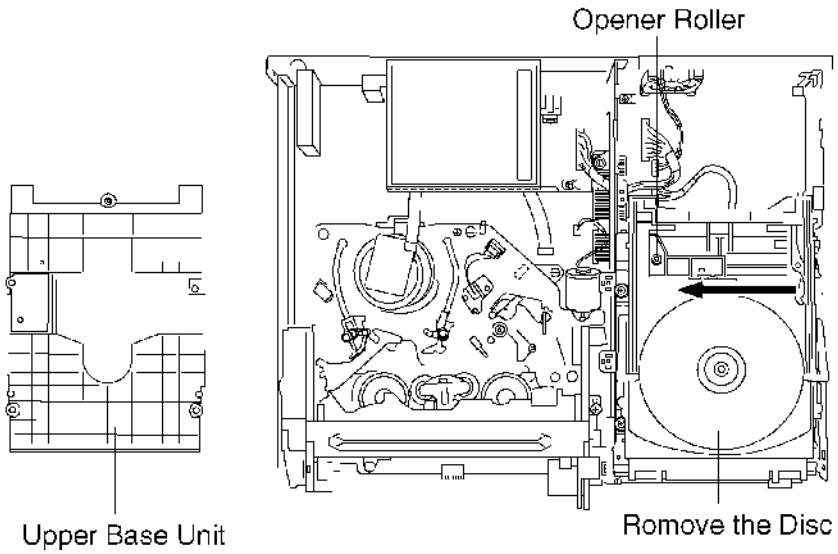
9.1.2. (DVD) When the power can not be turned off.

1. Press [POWER] key on the front panel for over 10 seconds to turn off the power forcibly, and press [(DVD) STOP] [(DVD) CH UP] keys on the front panel simultaneously for 5 seconds.

9.2. (DVD) When the Forcible Disc Eject can not be done.

1. Turn off the power and pull out AC cord.
2. Remove the Top Case.
3. Remove the Front Panel.
4. Remove screw (A) and Earth Angle.
5. Remove 4 screws (B) and Upper Base Unit from DVD-RAM Drive.
6. Take out the disc and put the Opener Roller on fully position for direction of Arrow.
7. Put the Upper Base Unit so that the Opener Roller is inserted into the groove.
8. Check center of Opener Roller is seen through the Opener position Checking Hole, and tighten 4 screws (B).





10 (VHS) Removing Cassette Tape manually

When the cassette tape could not be uninstalled from an electrical malfunction, there are 2 ways to remove a cassette tape.

10.1. (VHS) Removal by compulsory unloading.

If Service Mode can be activated when the power can not be turned on, this operation is able.

1. Press [FF] and [EJECT] button simultaneously for more than 3 seconds and set the Service Mode to 7.
2. Press [STOP] button in order to unload the mechanism. (Pay attention to tape slack)

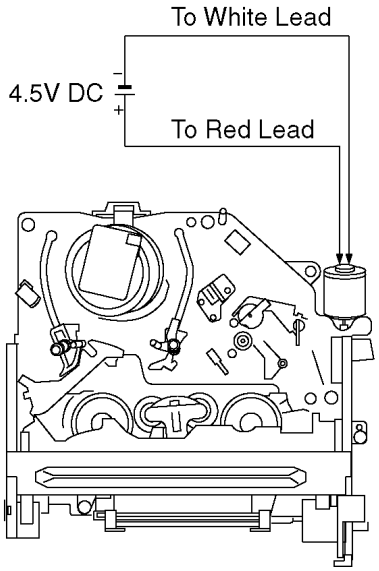
   Service Mode Display:

   7 ** ** (STOP) → 7 0L ** (EJECT)

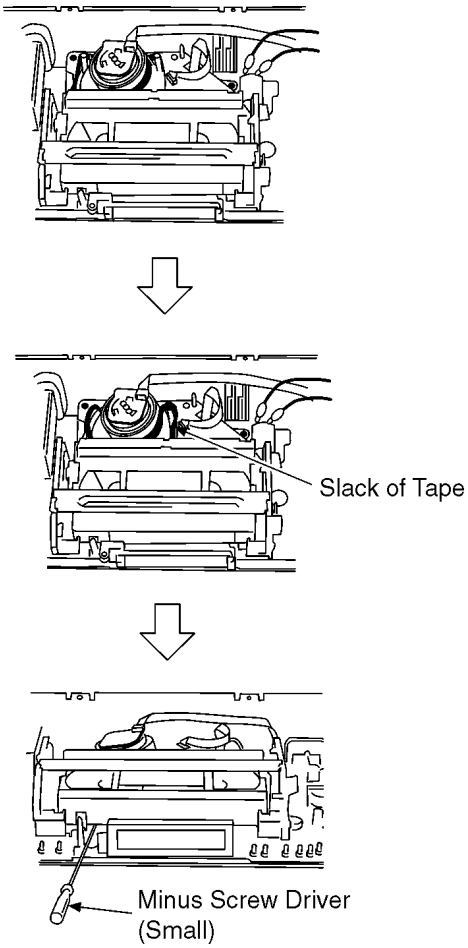
10.2. (VHS) Removal by manual operation by rotating the Loading Motor with the batteries.

1. Disconnect the AC plug, and remove the Top Panel and the Front Panel by referring to the Disassembly Procedures.
2. Connect three batteries (1.5V spec.) to the Loading Motor in series for supplying 4.5V to rotate the Loading Motor as shown below.

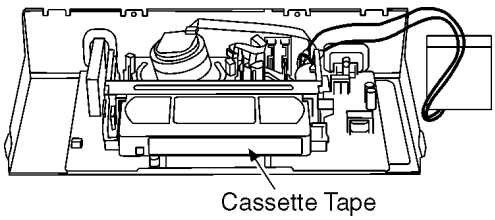
CONNECTION for UNLOADING



3. Stop unloading just before unloading will be completed as shown below, and then the tape becomes slack as shown below.
4. Rotate the S-Reel by a small minus screwdriver to remove the slack tape as shown below.

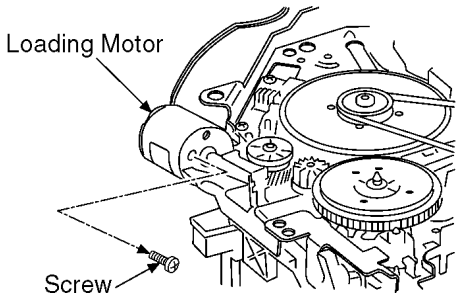


5. Then unload again to remove the cassette tape as shown below.

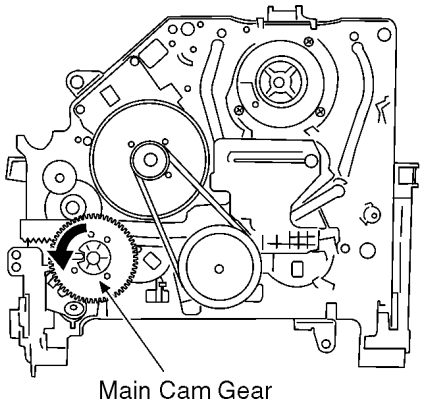


10.3. (VHS) Take out Cassette Tapemanually after removing the mechanism

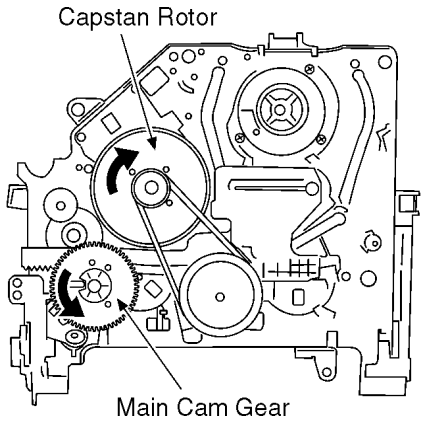
1. Disconnect the AC plug, and remove the Top Panel, Front Panel and the Mechanism by referring to **"14 Assembling and Disassembling"**
2. Remove the Screw and remove the Loading Motor as shown below.



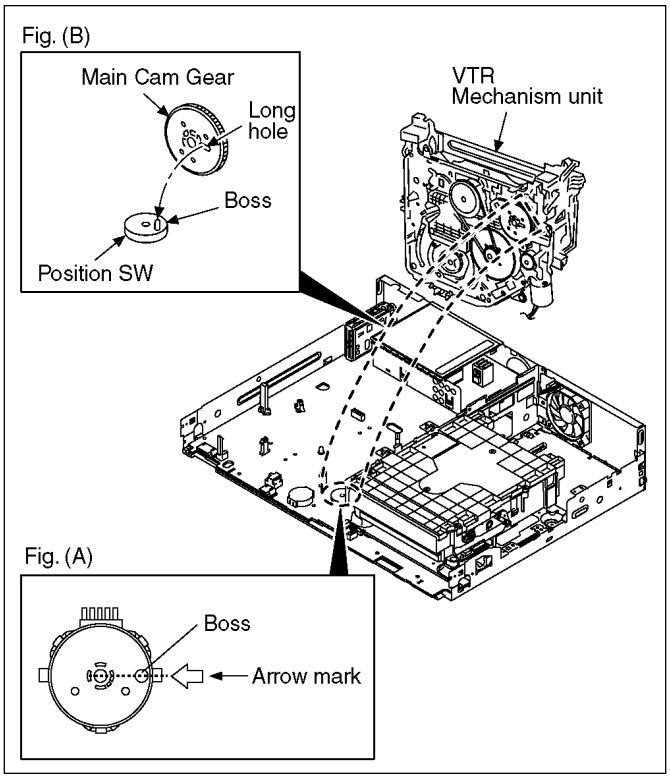
3. Rotate the Main Cam Gear counter-clockwise until just before the unloading will be completed as shown below. .



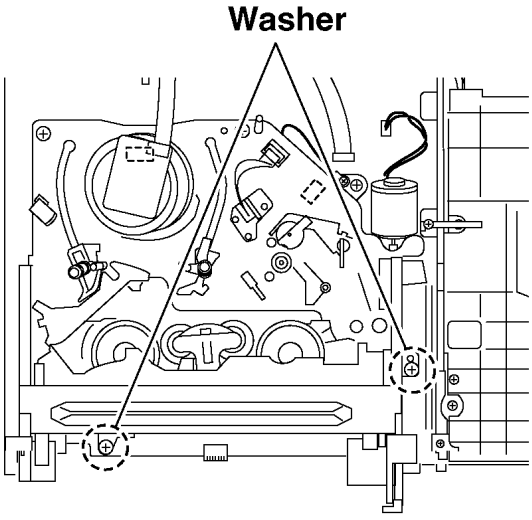
4. Rotate the Capstan Motor clockwise to remove the slack tape as shown below.
5. Rotate the Main Cam Gear counter-clockwise again to remove the cassette-tape as shown below.



6. Attach Loading Motor and tighten the screw.
7. Set the Position Switch to EJECT POSITION certainly and attach the mechanism to chassis as shown below.



Caution:
In some case, washer is used for 2 Black Screws fixing front side of R4 Mechanism.
In this case, do not mistake washer position when installing R4 Mechanism.



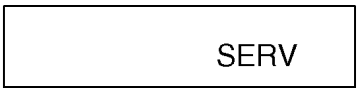
11 (DVD) Service Explorer

Confirm "RAM-Drive Last Error" in Service Mode

Execute Service Mode

1. When the power is off, press [VHS to DVD DUBBING], [OPEN/CLOSE] and [(DVD) STOP] keys simultaneously for 5 seconds.

   FL Display:

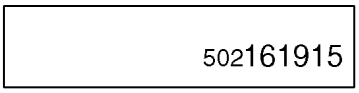
   *After finishing display "(7). Factor of Drive Error occurring", press [0] [2] ~[1] [9] keys of the Remote Controller so that 19 memories can be displayed as maximum.

2. Press [4] [2] keys of remote controller.

   Example of FL Display:

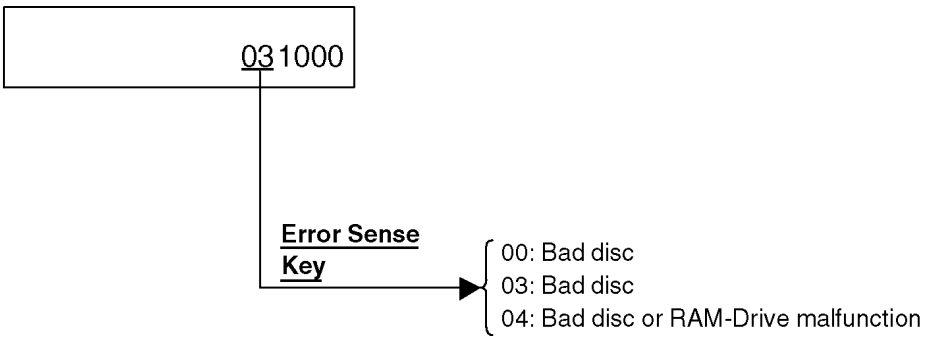
   (1) Error Number is displayed for 5 seconds.

   (2) Time when the error has occurred is displayed for 5 seconds.

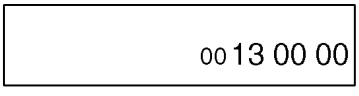
   The error has occurred at 2005(year)/Feb.(month)/16(day)/19(hour):15(minute)

   (3) Last Drive Error (1/2) is displayed for 5 seconds.

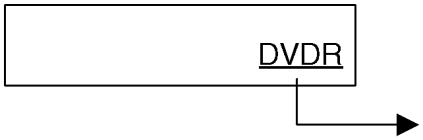
When above error codes are displayed, confirm operation with Panasonic RAM disc or Panasonic DVD-R disc.
***If the operation is OK, judge the error is due to media.**
***If the operation is NG and symptom as BLOCK NOISES and so on that are particular symptom of Digital appears, judge the error is due to RAM-Drive or Digital PCB.**

(4) Last Drive Error (2/2) is displayed for 5 seconds.



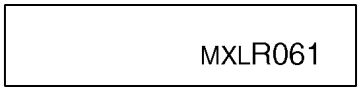
*This error code is unnecessary for service.

(5) Error occurring Disc type is displayed for 5 seconds.



Disc type
*The error disc cannot be specified, display as "DVD".

(6) Disc Maker´s ID is displayed for 5 seconds.



Example of Disc Maker´s ID:

DVD-R Disc

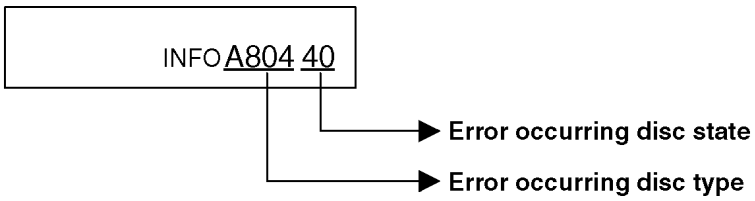
No.	FL Display (Disc Maker´s ID)	Disc Maker	Country
1	MEI	Panasonic	Japan
2	PVC	Pioneer	Japan
3	MCC	Mitsubishi Chemical Corporation	Japan
4	TDK	TDK	Japan
5	MXL	Maxell	Japan
6	MCI	MITUI CHEMICALS	Japan
7	JVC	Victor JVC	Japan
8	TAIYOYUDEN	Taiyo yuden	Japan
	TYG		
9	GSC	Giga Storage	Taiwan
10	PRODISC	Prodisc	Taiwan
11	PRINCO	PRINCO	Taiwan
12	RITEK	RITEK	Taiwan
13	OPTDISC	OPTDISC	Taiwan
14	LEAD DATA	LEAD DATA	Taiwan
15	CMC	CMC	Taiwan
16	AUVISTAR	AUVISTAR	Taiwan
17	ACER	Acer	Taiwan
18	VIVASTAR	VIVASTAR	Switzerland
19	LGE	LG Electronics	Korea

DVD-RAM Disc

No.	FL Display (Disc Maker´s ID)	Disc Maker	Country
1	MEI	Panasonic	
2	MATSUSHITA	Panasonic	Japan
3	MXL	Maxell	Japan
4	PRODISC	Prodisc	Taiwan
5	OPTDISC	OPTDISC	Taiwan
6	CMC	CMC	Taiwan

*Since an display is arbitrarily set up by the disk producer side, the above-mentio ned display may be changed. Please make it reference as an example of a display.

(7) Factor of Drive Error occurring is left displayed



Error Occurring Disc Type

FL Display	Disc Type
00	DVD-ROM/Video
01	Audio-CD
02	2.6GB DVD-RAM
03	4.7GB DVD-RAM
04	DVD-R

Error Occurring Disc State

FL Displays (Hexadecimal)	Description			
	Disc distinction state	Cartridge disc state	Cartridge disc state	Disc size
00	OK	With cartridge	Has not been opened yet.	12 cm
10	OK	With cartridge	Has not been opened yet.	8 cm
20	OK	With cartridge	Has been opened.	12 cm
30	OK	With cartridge	Has been opened.	8 cm
40	OK	Bare	Has not been opened yet.	12 cm
50	OK	Bare	Has not been opened yet.	8 cm
60	OK	Bare	Has been opened.	12 cm
70	OK	Bare	Has been opened.	8 cm
80	NG	With cartridge	Has not been opened yet.	12 cm
90	NG	With cartridge	Has not been opened yet.	8 cm
A0	NG	With cartridge	Has been opened.	12 cm
B0	NG	With cartridge	Has been opened.	8 cm
C0	NG	Bare	Has not been opened yet.	12 cm
D0	NG	Bare	Has not been opened yet.	8 cm
E0	NG	Bare	Has been opened.	12 cm
F0	NG	Bare	Has been opened.	8 cm

12 (DVD) Self-Diagnosis and Special Mode Setting

12.1. (DVD) Self-Diagnosis Functions

Self-Diagnosis Function provides information for errors to service personnel by “Self-Diagnosis Display” when any error has occurred.

U, H** and F** are stored in memory and held.**

Display on FL will be cancelled when the power is turned off or AC input is turned off during self-diagnosis display is ON.

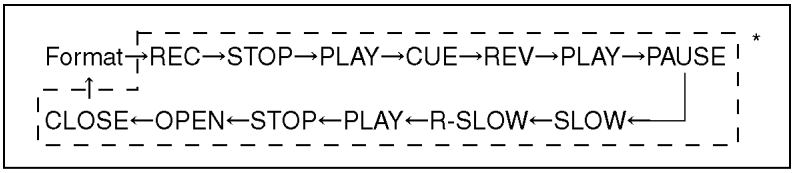
Error Code	Diagnosis contents	Description	Monitor Display	Automatic FL display
U30	Remote control code error	Display appears when main unit and remote controller codes are not matched.	No display	*CHK REMOTE “*” is remote controller code of the main unit. Display for 5 seconds.
U59	Abnormal inner temperature detected	Display appears when the drive temperature exceeds 70°C. The power is turned off forcibly. For 30 minutes after this, all key entries are disabled. (Fan motor operates at the highest speed for the first 5 minutes. For the remaining 25 minutes, fan motor is also stopped.) The event is saved in memory as well.	No display	U59 “U59” is displayed for 30 minutes.
U99	Hang-up	Displayed when communication error has occurred between Main microprocessor and Timer microprocessor.	No display	U99 Displayed is left until the [POWER] key is pressed.
H19	Inoperative fan motor	Display appears when inoperative fan motor is detected after powered on. The power is turned off when detecting.	No display	No display
F00	No error information	Initial setting for error code in memory (Error code Initialization is possible with error code initialization and main unit initialization.)	No display	No display
F58	Drive hardware error	Display appears when drive unit error is detected. The event is saved in memory.	No display	No display
F34	Initialization error when main microprocessor is started up for program recording	Display appears when initialization error is detected after starting up main microprocessor for program recording. The event is saved in memory. The power is turned off when detecting.	No display	No display
UNSUPPORT	Unsupported disc error	*An unsupported format disc was played, although the drive starts normally. *The data format is not supported, although the media type is supported. *Exceptionally in case of the disc is dirty.	**“This disc is incompatible.”**	UNS UPPORT Display for 5 seconds.
NO READ	Disc read error	*A disc is flawed or dirty. *A poor quality failed to start. *The track information could not be read.	**“Cannot read. Please check the disc.”**	NO READ
HARD ERR	Drive error	The drive detected a hard error.	**“DVD drive eeror.”**	Display for 5 seconds. HARD ERR
SELF CHECK	Restoration operation	Since the power cord fell out during a power failure or operation, it is under restoration operation. *It will OK, if a display disappears automatically. If a display does not disappear, there is the possibility that defective Digital P.C.B. / RAM drive.	No display	SLF CHECK
Full Program	16 programs are already set.	16 programs are already set.	No display	PROG FULL

Error Code	Diagnosis contents	Description	Monitor Display	Automatic FL display
UNFORMAT	The disc is not formatted	You have inserted an unformatted DVD-RAM or DVD-RW that is unformatted or recorded on other equipment. If you will use this disc, format is necessary. But, all programs recorded on this disc will be deleted.	Format This disc is not formatted properly. Format the disc in DISK MANAGEMENT?	UNFORMAT
F60	DVD module has not been started.	Defect of Digital P.C.B. Mode: No change	No display	F60

12.2. (DVD) Special Modes Setting

Item		FL display	Key operation
Mode name	Description		Front Key
TEST Mode	*All the main unit´s parameters (include tuner) are initialized. Then VHS Microproccesor is initialized to shipping setting too.	L1 TEST	Press [VHS to DVD DUBBING], [OPEN/CLOSE] and [(DVD) REC] keys simultaneously for 5 seconds when power is off.
Service Mode	Setting every kind of modes for servicing. *Details are described in "**12.3. (DVD) Service Mode**".	SERV	When the power is off, press [VHS to DVD DUBBING], [(DVD) STOP] and [OPEN/CLOSE] keys simultaneously for 5 seconds.
Rating password	The audiovisual level setting password is initialized to "Level 8".	INIT	While the tray is open, press [(DVD) REC] and [(DVD) PLAY] simultaneously for 5 seconds.
Forced disc eject	Removing a disc that cannot be ejected. The tray will open and unit will shift to P-off mode. *When Timer REC is ON or EXT-LINK is ON, execute " Forced disc eject " after releasing Timer REC or EXT-LINK. *This command is not effective during "Child lock" is ON.	The display before execution leaves. *********	When the power is off, press [(DVD) STOP] and [(DVD) CH UP] keys simultaneously for 5 seconds.
Forced power-off	When the power button is not effective while power is ON, turn off the power forcibly. *When Timer REC is ON or EXT-LINK is ON, execute "Forced Power-off" after releasing Timer REC. Action: The tray will open, and the power will turn off.	Display in P-off mode.	Press [Power] key over than 10 seconds.
Aging	Perform sequence of modes as * Aging Description shown below continually.	Display following the then mode.	When the power is ON, press [(DVD) CH DOWN], [VHS to DVD DUBBING] and [OPEN / CLOSE] simultaneously for over 5 seconds and less than 10 seconds. *When the unit has hung-up because of pressing keys for over 10 seconds, once turn off the power, and re-execute this command. "When releasing Aging mode, press [POWER] key.

Aging Contents (Example):



*XP mode ・・・・・repeat twice
SP mode ・・・・・repeat 4 times
LP mode ・・・・・repeat 8 times
EP mode ・・・・・repeat 12 times

Item		FL display	Key operation
Mode name	Description		Front Key
Demonstration lock/unlock	Ejection of the disc is prohibited. The lock setting is effective until unlocking the tray and not released by "Main unit initialization" of service mode.	*When lock the tray. LOCK "LOCK" is displayed for 3 seconds.	When the power is on, press [(DVD) STOP] and [POWER] keys simultaneously for 5 seconds.
		*When unlock the tray. UNLOCK "UNLOCK" is displayed for 3 seconds.	When the power is on, press [(DVD) STOP] and [POWER] keys simultaneously for 5 seconds.
		*When pressing OPEN/CLOSE key while the tray is locked. LOCK Display "LOCK" for 3 seconds.	Press [OPEN/CLOSE] key while the tray is locked.
ATP Initialization	ATP setting is initialized, and the unit turns off automatically.	It is same with display in stop mode. *********	When the power is on (E-E mode), press [(DVD) CH UP] and [(DVD) CH DOWN] simultaneously for 5 seconds.
Progressive initialization	The progressive setting is initialized to Interlace.	The display before execution leaves. *********	When the power is on (E-E mode), press [(DVD) STOP] and [VHS to DVD DUBBING] simultaneously for 5 seconds.

12.3. (DVD) Service Modes

Service mode setting: While the power is off, press [VHS to DVD DUBBING], [OPEN/CLOSE] and [(DVD) STOP] keys simultaneously for 5 seconds.

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
Release Items	Item of Service Mode executing is cancelled.	SERV	Press [0] [0] or [Return] in service mode.
Error Code Display	Last Error Code of U/H/F held by Timer is displayed on FL. *Details are described in **"12.1. (DVD) Self-Diagnosis Functions".**	♣□□ *♣ shows U/H/F. □□ shows number.	Press [0] [1] in service mode

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
ROM Version Display	(01)Region code, (02)MAIN firm version, (03)TIMER firm version, (04)DRIVE firmware version, (05)ROM collection version, (06)VHS microprocessor version are displayed on FL for 5 seconds per each version in order, but (07)VHS ROM collection version will be left displayed.	(01)Region code 01 No* (02)MAIN firm version 02 ****** (03)TIMER firm version 03 ****** (04)DRIVE firmware version 04 ***** (05)ROM collection version 05 *** (06)VHS microprocessor version 06 **** (07)VHS ROM collection version 07 ** * are version displays.	Press [0] [2] in service mode
White Picture Output	White picture is output as component Output from AV Decoder. *White picture (Saturation rate : 100%) *It is enable to switch Interlace/Progressive by "I/P switch: [1] [4]"	*Initial mode is "Interlace". WHITE	Press [1] [1] in service mode.
		Switch Interlace/Progressive P WHTIE	Press [1] [4] in White Picture Output mode. *I/P are switched alternately.
Magenta Picture Output	Magenta picture is output with Component Output from AV Decoder. *Magenta picture (Saturation rate: 100%) *It is enable to switch Interlace/Progressive by "I/P switch: [1] [4]"	*Initial mode is "Interlace". MAGE	Press [1] [2] in service mode.
		Switch Interlace/Progressive P MAGE	Press [1] [4] in Magenta Picture Output mode. *I/P are switched alternately.
RTSC Return in XP (A & V)	L1 input signal is encoded (XP), decoded (XP) and output decoded signal to external without DISC recording and DISC playback.	Initial mode: EE2/ Interlace/ XP/ Audio 48kHz 48 EE2 XP	Press [1] [3] in service mode.
		Switch Interlace/Progressive 48P EE2 XP	Press [1] [4] in RTSC Return XP mode. *I/P are switched alternately.
		Audio 44.1 kHz/ 48 kHz Switch 44 EE2 XP	Press [2] [4] in RTSC Return XP mode. *48 kHz / 44.1 kHz are switched alternately.
I/P Switch	Switch Interlace and Progressive in EE mode. *Initial setting is "Interlace". *This command is effective during executing "White Picture Output", "Magenta Picture Output" and "RTSC Return in XP (A & V)" modes.	Initial mode is Interlace 14 SERV	Press [1] [4] in I/P Switch mode. *I/P are switched alternately.
		Switch Interlace/Progressive 14P SERV	

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
Audio Mute (XTMUTE)	Check whether mute is applied normally by the timer microprocessor.	T-MUTE	Press [2] [1] in service mode.
Audio Mute (XDMUTE)	Check whether mute is applied normally by the Digital P.C.B.	D-MUTE	Press [2] [2] in service mode.
Audio Pattern Output	The audio pattern stored in the internal memory is output (Lch: 1kHz/-18dB) (Rch: 400Hz/-18dB) *Audio sound clock switching operation of DAC can be confirmed by sub command [2] [4].	Initial mode (Audio 48kHz) 48 AUDIO	Press [2] [3] in service mode.
		Audio 44.1kHz/48kHz switching 44 AUDIO	Press [2] [4] in Audio Pattern Output mode. *48 kHz / 44.1 kHz are switched alternately.
Laser Used Time Indiction	Check laser used time (hours) of drive.	ERR ***** I(*****) is the used time display in hour. ILaser used time of DVD/ CD in Playback/Recording mode is counted.	Press [4] [1] in service mode.
Delete the Laser Used Time	Laser used time stored in the memory of the unit is deleted.	CLRLASER	Press [9] [5] in service mode.
RAM Drive Last Error	RAM Drive error code display. *For details about the drive error code, refer to the Service Manual for the specific RAM Drive. *Details are described in "**11. (DVD) Service Explorer**".	1. Error Number is displayed for 5 seconds. NO** 2. Time when the error has occurred is displayed for 5 seconds. YMMDDhhmm Y: Year MM: Month DD: Day hh: Hour mm: Minute 3. Last Drive Error (1/2) is displayed for 5 seconds. ****** 4. Last Drive Error (2/2) is displayed for 5 seconds. ** ****** 5. Error occurring Disc type is displayed for 5 seconds. ****** 6. Disc Maker ID is displayed for 5 seconds. ** ****** 7. Factor of Drive Error occurring is left displayed IFO******	Press [4] [2] in service mode. Then press [0] [1] ~ [1] [9], the past 19 errors are displayed. In case that the maker cannot be identified, display is black out.
Delete the Last Drive Error	Delete the Last Drive Error information stored on the DVD RAM-Drive.	CLRDRIVE	Press [9] [6] in service mode.
Turn on all FL/LEDs	All segments of FL and all LEDs are turned on.	All segments are turned on.	Press [5] [1] in service mode.

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
S1 signal output	Forcibly superimpose the S1 signal (approx. 4.5V DC) on the EE chroma signal, and check the output on the S terminal.	S1 OUTPUT	Press [5] [2] in service mode.
S2 signal output	Forcibly superimpose the S2 signal (approx. 2V DC) on the EE chroma signal, and check the output on the S terminal.	S2OUTPUT	Press [5] [3] in service mode.
Front connection inspection	Press all front keys and check the connection between Main P.C.B. and Front P.C.B.	0r ** 0r ** (1) (2) (1) (2) (1) Each time a key is pressed, segment turned on increases one by one. (2) Total umber of keys that have been pressed.	Press [5] [4] in service mode.
Production Date Display	Display the date when the unit was produced.	YYYYMMDD YYY: Year MM: Month DD: Day	Press [6] [1] in service mode.
Display the accumulated working time	Display the accumulated unit's working time.	****** (Indicating unit: Second)	Press [6] [4] in service mode.
Display the Error History	Display the Error History stored on the unit.	Display reason of error for 5 seconds. ** Display the time when the error has occurred for 5 seconds.. YMM DDHHMM Y: Year MM: Month DD: Day HH: Hour MM: Minute Accumlated working time to occurring of the error is left displayed. ****** (Indicating unit: Second)	Press [6] [5] in service mode. Then press [0] [1] ~ [1] [9], the past 19 error histories are displayed.
Delete the Error History	Delete Error History information stored on the unit.	CLR FTREC	Press [9] [7] in service mode.
Tray OPEN/CLOSE Test	The RAM drive tray is opened and closed repeatedly.	********* "*" is number of open/close cycle times.	Press [9] [1] in service mode *When releasing this mode, press the [POWER] button on Front Panel more than 10 seconds.
Error code initialization	Initialization of the last error code held by timer (Write in F00)	CLR E-CODE	Press [9] [8] in service mode.
Initialize Service	Last Drive Error, Error history and Error Codes stored on the unit are initialized to factory setting. Then VHS Microprocessor is initialized to shipping setting too.	CLR SERV	Press [9] [9] in service mode.
Finishing service mode	Release Service Mode.	Display in STOP (E-E) mode. *******	Press power button on the front panel in service mode.

13 (VHS) Self-Diagnosis and Special Mode Setting

13.1. (VHS) Self-Diagnosis Functions

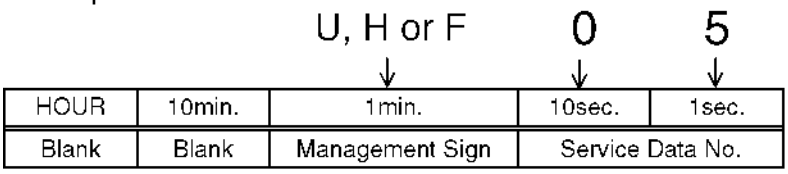
This model has a self-diagnosis and display function. If the VHS section detects trouble during installation or during use, one of the following Error Codes will automatically appear in the display on VHS side. Error Codes are displayed in the form of a single English letter followed by two numbers, as for example "H01".

Note:

1. The indication "U" is displayed on the FIP while power remains on.
2. The indication "H" or "F" is displayed on the FIP, and the power is automatically turned off. When the power is turned on again, the Error indication code will disappear and the unit will return to normal display mode (either clock or counter is displayed).
3. This Error indication code will be stored in the microprocessor even after the AC plug being disconnected.

   The two-digit number portion of the stored Error indication code can be re-displayed in "second" display portion (the last 2 digits of the FIP) by placing the unit is Service Mode Number 3 When turning on Service Data Display as for example "01" or "02" etc. If a second error occurs, the most recent error will be displayed and stored until 3 self-diagnosis histories in maximum.
4. To erase the stored Error Code data, Press FF and EJECT buttons on VCR simultaneously for over 5 seconds in Service Mode 3.

Example of Error Indication on the FIP



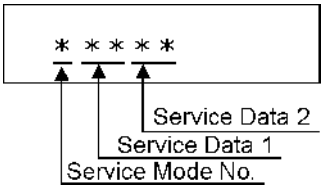
Division of Management

Management Sign	Management Division
U	User can deal with.
H	Shop can deal with.
F	It should be dealt with in service shop.

Error Number at a glance

Memory No. (Error No.)	Reason	Automatic display	Memory
H01	The cylinder could not be started. (Error of the cylinder or the cylinder driver.)	Yes	Yes
H02	The CAP FG could not be detected.	Yes	Yes
F03	Mechanism lock during without the unloading and the cassette-up.	Yes	Yes
F04	Mechanism lock during unloading	Yes	Yes
F05	S-reel pulse cannot be detected when a cassette tape is inserted. (Error of the S-reel system or the Capstan system.)	No	Yes
F06	Mechanism lock during the Cassette-up.	Yes	Yes
H07	The recording circuit can not be operated in REC mode.	Yes	Yes
H08	The recording circuit is operated in except for REC mode.	Yes	Yes
U11	Cylinder clogs during the PLAY mode.	Yes	Yes
F15	S-reel pulse cannot be detected when a cassette tape is inserted. (Error of the S-reel system or the Capstan system.)	No	Yes
H16	Detection of the Cylinder lock during the constant rotation	No	Yes
H17	Detection of S-reel lock during the constant tape running	Yes	Yes
H18	Detection of T-reel lock during the constant tape running	Yes	Yes
F20	NG1 in the PG Shifter Automatic Adjustment (The cylinder rotation is unstable during the automatic adjustment.)	Yes	Yes
F21	NG2 in the PG Shifter Automatic Adjustment (The vertical sync signal is lacked while over 5 seconds on the alignment tape.)	Yes	Yes
F22	NG3 in the PG Shifter Automatic Adjustment (The installing position of Heads to the cylinder is our of specification.)	Yes	Yes
F23	NG4 in the PG Shifter Automatic Adjustment (The servo is not locked to the cylinder for more than 10 sec.)	Yes	Yes
H80	An exceptional ejection depends on a Error	No	Yes

13.2. (VHS) Special Modes Setting

Item		FL display	Key operation
Mode name	Description		Front Key
Tracking Center	Tape Tracking is adjusted to center FIX position.	No display.	During PLAYBACK, press [(VHS) CH UP] and [(VHS) CH DOWN] keys simultaneously.
VHS Service Mode	In order to make service easy, a part of inside information of a microprocessor is displayed on FIP. *Details are described in **"13.3. (VHS) Service Mode"**.		Press [FF], and [EJECT] keys simultaneously for 3 seconds when power is off.
Releasing Timer Program	Releasing Continuation Timer Program	No display.	While in Timer REC mode, press [(VHS) STOP] key for 3 seconds.
Eject	Ejecting Cassette Tape	No display.	While in other than Timer REC mode, press [(VHS) STOP] key for 3 seconds or press [STOP] key of the Remote Controller for 3 seconds in VHS mode.

13.3. (VHS) Service Modes

<Service Mode Setting>

When power is OFF, press [FF] and [EJECT] keys simultaneously for 3 seconds to into Service Mode.

In Service Mode, press [FF] and [EJECT] keys simultaneously to add Service Number.

13.3.1. (VHS) Service Mode and Service Data at a glance

Service Number	Contents	Contents of Indication on minute	Contents of Indication on second	Remarks
0	Indication for the inner data of IC6001	VHS mode (Real time)	Process number (Real time)	
		VCR mode (OPM)	Management number of the processing during mechanism shifting	
1	Indication for the inner data of IC6001	Starting / finishing edges detecting data (Real time)	Data of receiving key (Real time)	
		00: Both starting / finishing edges have not been 01: Starting edge is detecting now 02: Finishing edge is detecting now 03: Both starting / finishing edges are detecting now	Indicate the receiving code when the key of VCR or remote controller being operated.	
2	Indication for the inner data of IC6001	Mechanism position (Real time) 0L: EJECT position 02: DOWN position 03: RREW position 04: LOAD position 05: REV position 06: PLAY position 07: POFF position 08: STOP_R position 09: STOP_F position - : FF/REW position - : Intermediate between each positions	Ordering for the Motors (Real time) 0*, 2*: CYL off, CAP off 1*: CYL off, CAP on (fwd) 3*: CYL off, CAP on (rev) 8*, A*: CYL on, CAP off 9*: CYL on, CAP on (fwd) B*: CYL on, CAP on (rev) *0: Motor off *1: Loading *2: Unloading *3: Break (Load + Unload)	There are next conditions in this mode for enable the mechanism operations without a cassette tape. l The starting / finishing edges are not detected. l The reel lock is not detected l The tape and the positions are not detected. , And so on. Press the EJET key for over 3 seconds in this mode, and then the VCR is shifted into the special modes, such as PG Adjustment, Model Code Setting, and so on.
				The orders for the motors are as follows. Bit 7: CYL ON/OFF Bit 6: ---------- Bit 5: CAP FWD/REV Bit 4: CAP ON/OFF Bit 3: ---------- Bit 2: ---------- Bit 1: UNLOADING(H) Bit 0: LOADING(H)

Service Number	Contents	Contents of Indication on minute	Contents of Indication on second	Remarks
3	Self-diagnosis history (1st)	Error number of history 1	Supplementary data 1 and 2 of history 1.	In the Self-Diagnosis Memory, next 3 BYTE is memorized for an Error. 1 BYTE: Its Error number 2 BYTE: Its supplementary data
4	Self-diagnosis history (2nd)	Error number of history 2	Supplementary data 1 and 2 of history 2.	
5	Self-diagnosis history (3rd)	Error number of history 3	Supplementary data 1 and 2 of history 3.	In these modes, the supplementary data 3 and 4 instead of the Error number and supplementary data 1 and 2 are indicated only while pressing STOP key.
6	Indication for the inner data of IC6001	Real time servo data (4 digits) (Real time)		
		Higher rank 1 BYTE of SERVO data	Lower rank 1 BYTE of SERVO data	
7	Manual mechanism operation	Real time mechanism position	Real time ordering for the Motors	Press the STOP key, and then the cassette tape is unloaded.
		0L: EJECT position 02: DOWN position 03: RREW position 04: LOAD position 05: REV position 06: PLAY position 07: POFF position 08: STOP_R position 09: STOP_F position - : FF/REW position - : Intermediate between each positions	0*, 2*: CYL off, CAP off 1*: CYL off, CAP on (fwd) 8*, A*: CYL on, CAP off 9*: CYL on, CAP on (fwd) B*: CYL on, CAP on (rev) *0: Motor off *1: Loading *2: Unloading *3: Break (Load + Unload)	

13.3.2. Example of FIP

4	0	3	1	2
HOUR	10min.	1min.	10sec.	1sec.
Service No.	Service Data 1		Service Data 2	

13.4. (VHS) Self-Diagnosis History Memory Function

13.4.1. (VHS) Condition for memorizing of the self-diagnosis history

1. The self-diagnosis result and the supplementary data are the condition memorized just as an Error is detected.
2. There are the histories from number 1 to number 3.
3. The latest Error is memorized on history number 1,and then the old histories are shifted to the history number 2, 3.
4. Put out data from the memory number 3 by the shift is deleted.
5. If the latest Error is same with the history number 1 (2nd-latest), it is not memorized.
   (The same Error number is not memorized in succession)

13.4.2. (VHS) Condition for clearing the self-diagnosis history

1. A case of that press the FF key and the EJECT key simultaneously over 5 seconds.
2. A case of that the factory jumper (TW1004) is shorted.

13.4.3. (VHS) Indication of the self-diagnosis history.

1. The self-diagnosis histories and its supplementary data could be indicated on the FIP with Service mode of number from 3 to 5.
2. The procedure of setting the service mode and the format if the indication are same as usual.

FIP INDICATION: 4 0 3 5 2

Hour of one-digit	Minute of two-digit	Minute of one-digit	Second of two-digit	Second of one-digit
Service mode number	Error number		Supplementary Data	
3	Number of history 1 (The latest)		Supplementary data 1 of history 1	Supplementary data 2 of history 1
4	Number of history 2 (2nd latest)		Supplementary data 1 of history 2	Supplementary data 2 of history 2
5	Number of history 3 (3rd latest)		Supplementary data 1 of history 3	Supplementary data 2 of history 3

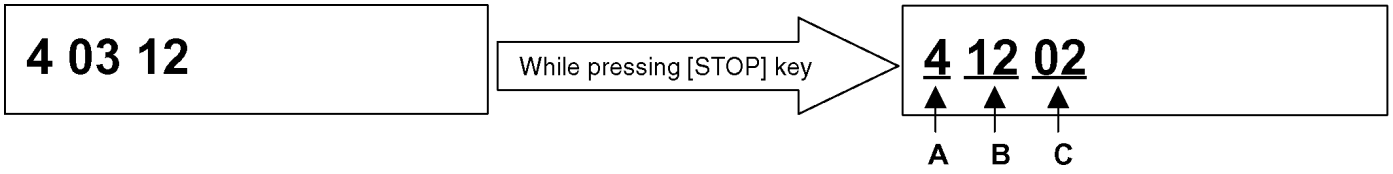
Both the Error numbers and its supplementary data of history 1, 2and 3 are indicated by selecting the Service mode 3, 4 and 5 as shown above.

In case of that any Error has not been memorized, the Error number and its supplementary data is indicated as " - ".

13.4.4. (VHS) Display of Supplementary Data 3 and 4

During displaying the Self-Diagnosis History, press [STOP] key on front panel to change the display.

***Example of Display**



A: Service Mode Number.

B: Supplementary Data 3...Mechanism process shifting Number.

C: Supplementary Data 4...LM(Loading Motor information)

*Display of 4 12 02 means that " Loading Motor turns ON when [EJECT] button was pressed, but an error has occurred while mechanism was between REV position and LOAD position.

<Supplementary Data 3>

[EJECT]	[FF]	[REW]
10: PLAY → passing REV 11: passing REV 12: passing REV → LOAD (Capstan STOP) 13: LOAD → DOWN 14: DOWN → EJECT 15: EJECT completion	U0: PLAY → STOP F U1: STOP F → FF U2: FF starting up	A0: PLAY → STOP F A1: STOP → REW A2: REW starting up
[PLAY]	[REC]	[STILL]
20: Cylinder starting up, Phase drawing	30: Cylinder starting up, Phase drawing	40:Turning forward
21: Audio muting, VV selection	31: REC signal output	41:Speed is 0, Capstan is OFF
[P.ON]	[STILL → PLAY]	[CUE]
-- Process of turning on power	48: Tape sending	49: x2 speed sending, Turning point of Calculating remains
[P.OFF]	[CUE → PLAY]	[REV]
70: PLAY → P.OFF	4A: Finishing edge Checking, Tape sending	80: PLAY → P.OFF
	4-: PLAY Checking, Tape sending	81: Rewinding
		P.OFF → REV

<Supplementary Data 4> (LM Information)

Result of request of driving Loading Motor.

Display	Description
1	There was no change of mechanism position. (Loading Motor was OFF)
2	There was some change of mechanism position. (Loading Motor was ON)

13.5. (VHS) Description of Self Diagnosis Memory

In this Self-Diagnosis Function, in case error has occurred continuously, maximum of the newest 3 error data are memorized.

And in order to analyze cause of error, the error number and the supplementary data of mode, mechanism position and so on are memorized.

13.5.1. (VHS) Error Number and Supplementary Data

The Supplementary Data as shown below are memorized to each error number.

Error No.	Reason	Supplementary Data			
		Data 1	Data 2	Data 3	Data 4
01	The cylinder could not be started. (Error of the cylinder or the cylinder driver.)	VHS mode	-	-	-
02	The CAP FG could not be detected.	VHS mode	-	Process No.	Number of FG
03	Mechanism lock during without the unloading and the cassette-up.	VHS mode	Standby position	Process No.	LM information
04	Mechanism lock during unloading	VHS mode	-	Process No.	LM information
05	S-reel pulse cannot be detected when a cassette tape is inserted. (Error of the S-reel system or the Capstan system.)	VHS mode	Tape position	Process No.	LM information
06	Mechanism lock during the Cassette-up.	VHS mode	Standby position	Process No.	LM information
07	The recording circuit can not be operated in REC mode.	VHS mode	-	Process No.	-
08	The recording circuit is operated in except for REC mode.	VHS mode	-	Process No.	-
11	Cylinder clogs during the PLAY mode.	VHS mode	-	Process No.	-
15	S-reel pulse cannot be detected when a cassette tape is inserted. (Error of the S-reel system or the Capstan system.)	VHS mode	Value of S-Reel Pulse counted	Process No.	-
16	Detection of the Cylinder lock during the constant rotation	VHS mode	Tape position	Process No.	-
17	Detection of S-reel lock during the constant tape running	VHS mode	Tape position	Process No.	Number of FG
18	Detection of T-reel lock during the constant tape running	VHS mode	Tape position	Process No.	Number of FG
20	NG1 in the PG Shifter Automatic Adjustment (The cylinder rotation is unstable during the automatic adjustment.)	VHS mode	-	Process No.	-
21	NG2 in the PG Shifter Automatic Adjustment (The vertical sync signal is lacked while over 5 seconds on the alignment tape.)	VHS mode	-	Process No.	-
22	NG3 in the PG Shifter Automatic Adjustment (The installing position of Heads to the cylinder is our of specification.)	VHS mode	-	Process No.	-
23	NG4 in the PG Shifter Automatic Adjustment (The servo is not locked to the cylinder for more than 10 sec.)	VHS mode	-	Process No.	-
80	An exceptional ejection depends on a Error	VHS mode	Refer to *Note 3	Process No.	-

Note 1: Details of "VHS mode" of the Supplementary Data 1 (These values are hexadecimal indication)

0: STOP, 1: EJECT, 2: REW, 3: FF, 4:REV, 5: CUE, 6: SLOW, 7: POWEROFF, 8: PLAY, 9: STIL,

A: REC, B: REC PAUSE, C: ADUB, D: ADUB PAUSE, E: INSERT, F: INSERT PAUSE

Note 2: Explanation of "Tape position" of the Supplementary Data

The Tape position Data is the area data of S-reel that is used for judgment of reducing speed in the Main microprocessor IC6001, and as the tape position is moved from the starting edge to the finishing edge, the value becomes smaller.

The Tape Data does not become "0" even if the tape reaches the finishing edge as the hub remains, and the tape position values are different between the large hub and the small hub as the each diameters are different from each other.

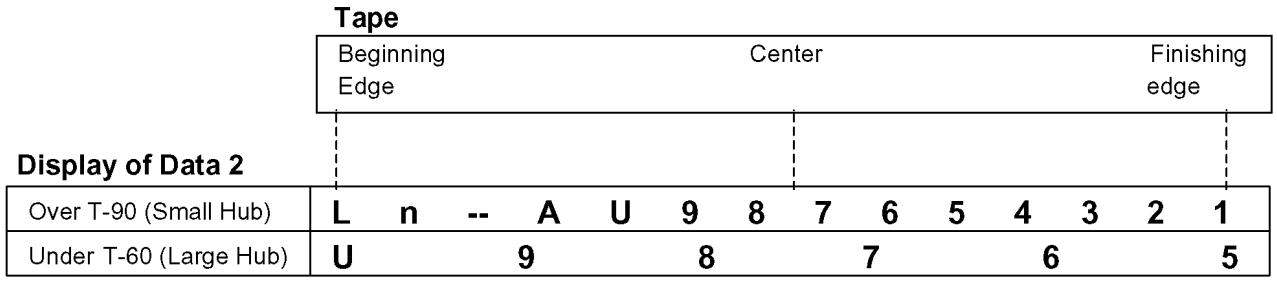
Tape Type	The aim of Tape position between the starting edge and the finishing edge
60 min. or less type (Large Hub)	The Tape position is divided into 6 stages between the Tape beginning edge: "A " and the Tape end edge: "5".
90 min. or over type (Small Hub)	The Tape position is divided into 14 stages between the Tape beginning edge: "E " and the Tape end edge: "1".

l "A" and "E" is hexadecimal. "A" =10 (Decimal), "E" =14 (Decimal).

l Hexadecimal indication from "A" to "E" are shown below.

A: B: C: D: E: F:

Tape position and Display


Tape
Beginning Edge
Center
Finishing edge
Display of Data 2
Over T-90 (Small Hub)
L n -- A U 9 8 7 6 5 4 3 2 1
Under T-60 (Large Hub)
U 9 8 7 6 5

Note 3: Supplementary Data 2 (Reason of Ejection)

Supplementary Data 2	Reason
1	S-reel pulse is less than 3 when the loading has been completed. (Miss catching the tape)
2	Pulse Timer over during the short rewind at the DOWN position. (Error of S-photo sensor system, S-reel system, Capstan system)
3	Mechanism lock from the DOWN position to the LOAD position during the loading.
4	Both ends have been detected at the LOAD position when the loading is started.

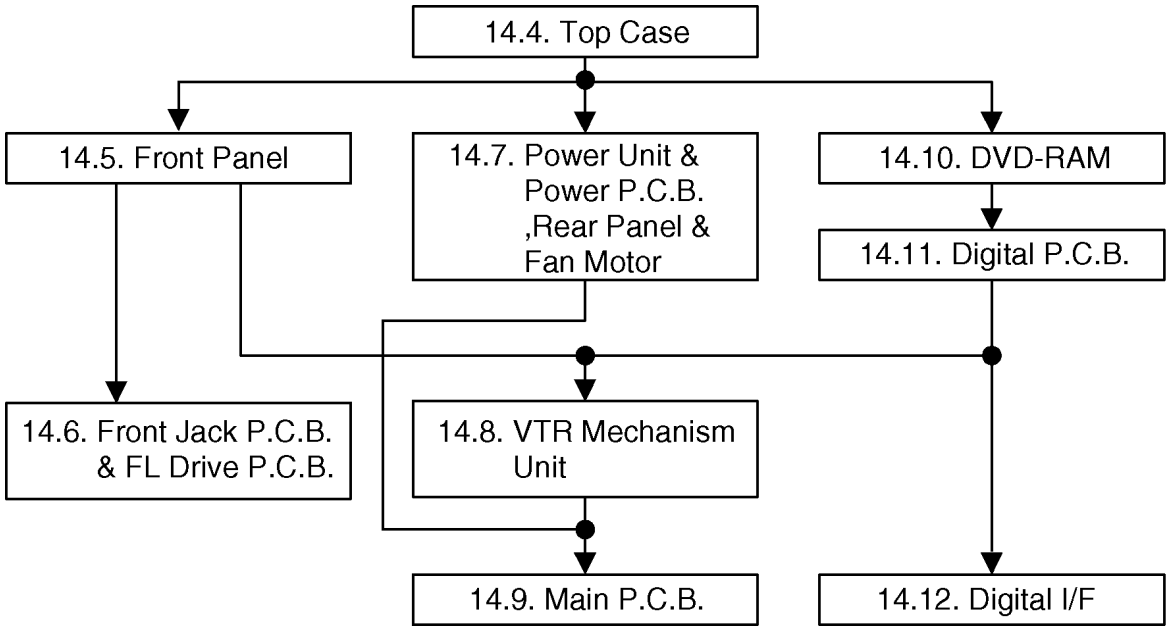
14 Assembling and Disassembling

Caution:
Original screws should be used.

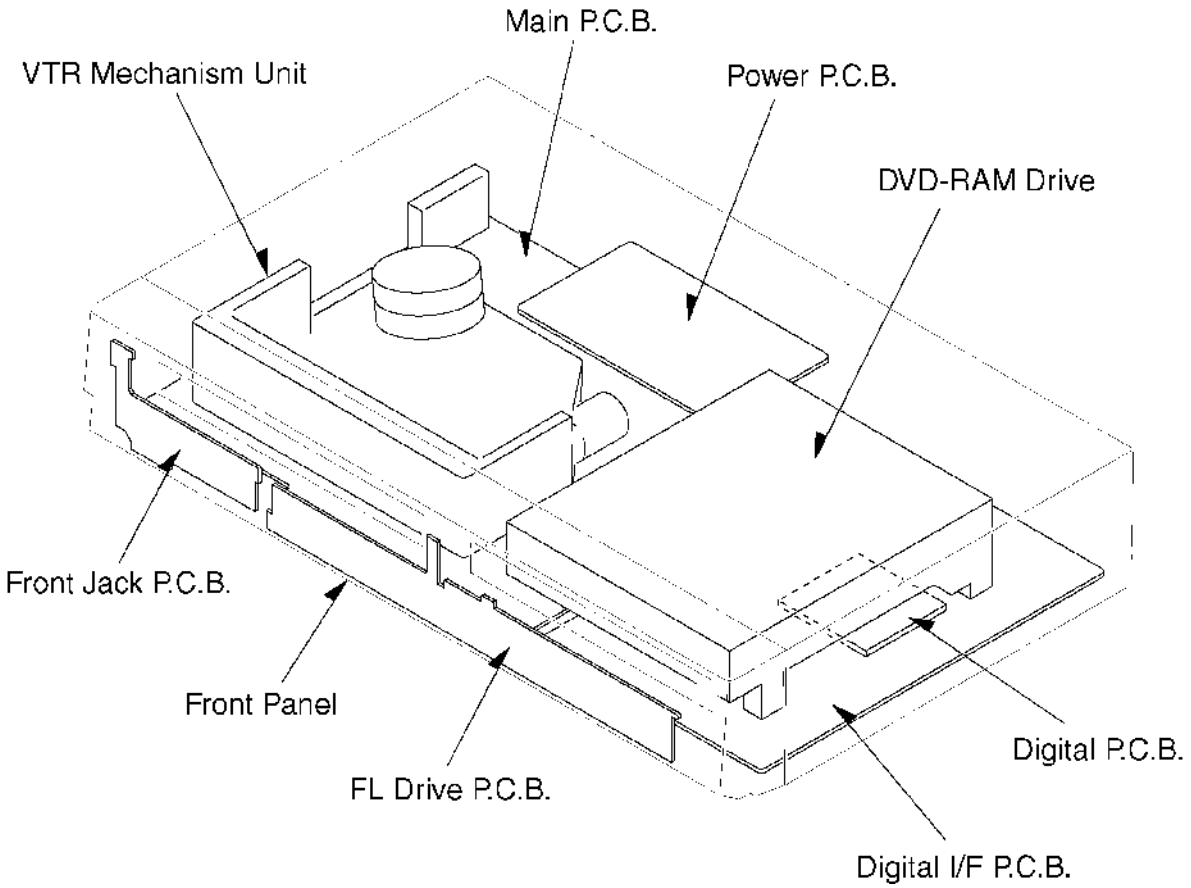
14.1. Disassembly Flow Chart

The following chart is the procedure for disassemblin g the casing and inside parts for internal inspection when carrying out the servicing.

To assemble the unit, reverse the steps shown in the chart below.


14.4. Top Case
14.5. Front Panel
14.7. Power Unit & Power P.C.B. ,Rear Panel & Fan Motor
14.10. DVD-RAM
14.11. Digital P.C.B.
14.6. Front Jack P.C.B. & FL Drive P.C.B.
14.8. VTR Mechanism Unit
14.9. Main P.C.B.
14.12. Digital I/F

14.2. P.C.B. Positions



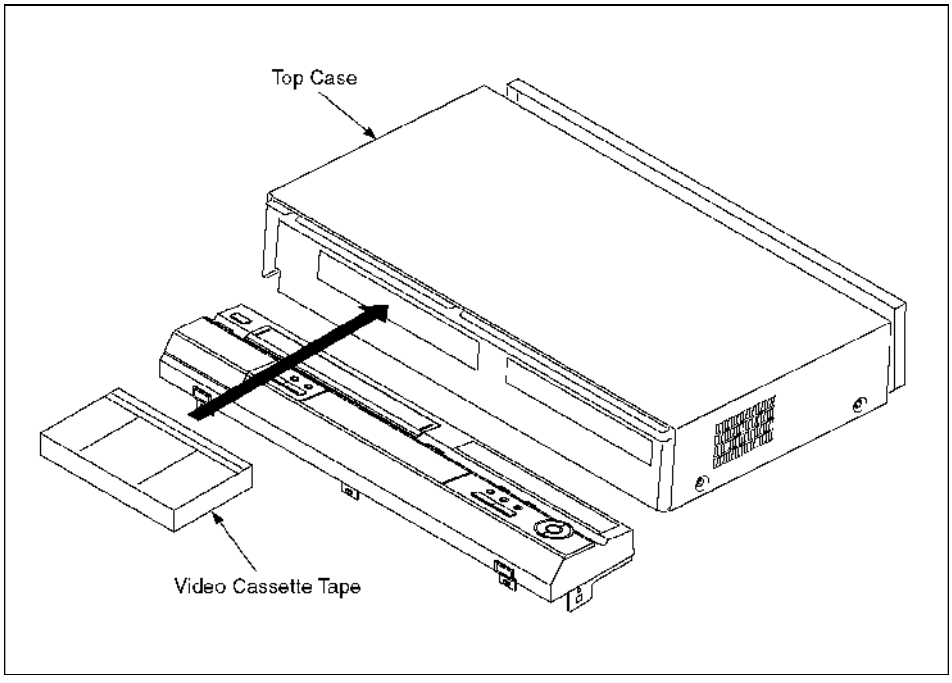
14.3. Caution with inserting cassette tape when disassembling the unit

Note1:

For description of the disassemblin g procedure, see the section 14.4.

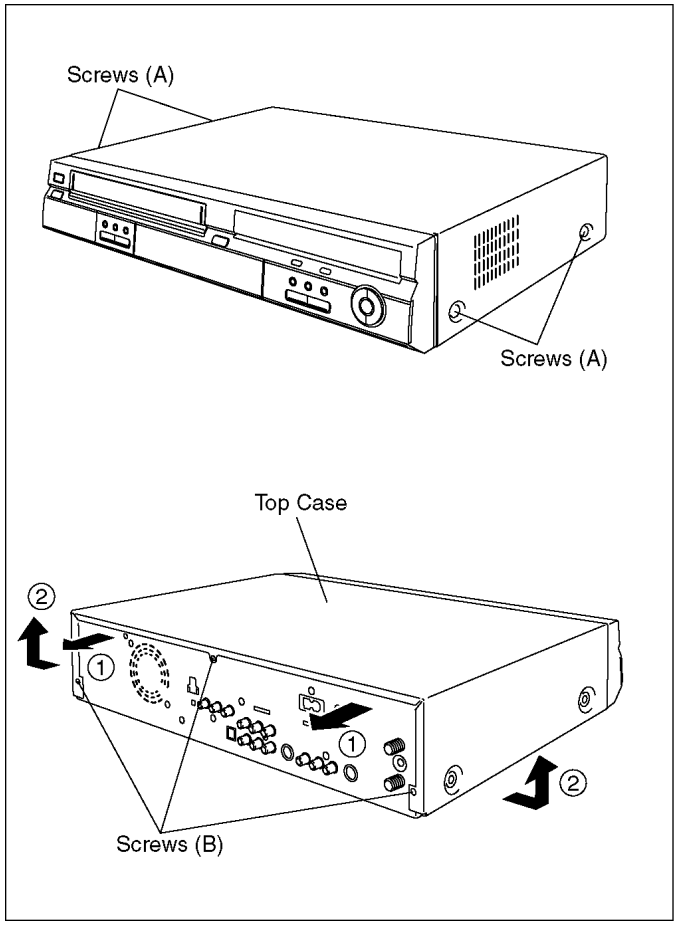
Note2:

Video Cassette might not enter when a strong lighting is applied to VHS Mechanism when Video Cassette is inserted. Please weaken the lighting or cover with the top panel etc.



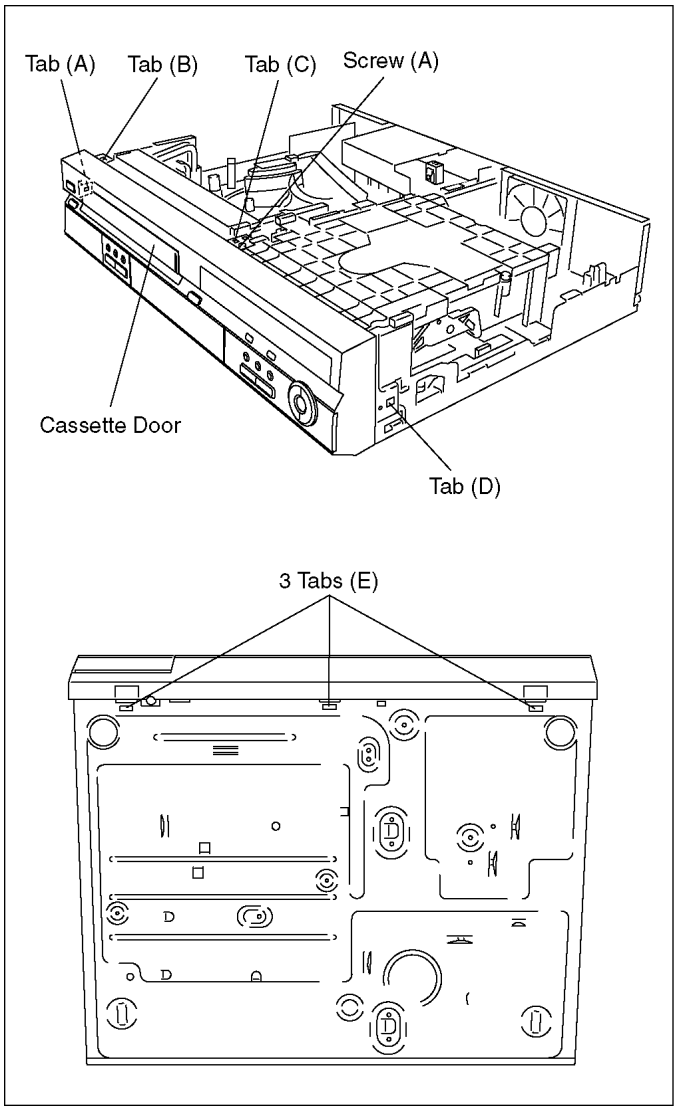
14.4. Top Case

1. Remove the 4 screws (A) and 3 screws (B).
2. Slide Top Case rearward and open the both ends at rear side of the Top Case a little and lift the Top Case in the direction of the arrows.



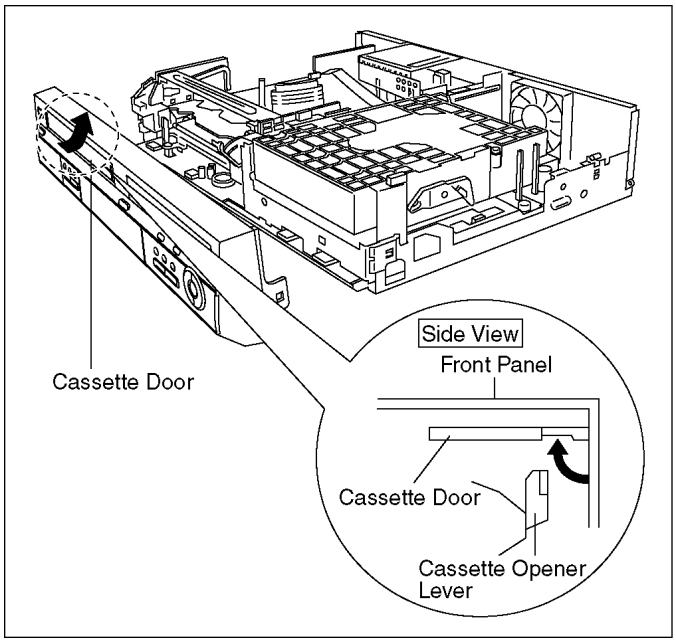
14.5. Front Panel

1. Remove one screw (A).
2. Unlock tab (A) and tab (B) simultaneously.
3. Unlock tab (C) and tab (D) simultaneously.
4. Unlock 3 tabs (E) respectively, and pull out Front Panel with connector slightly.



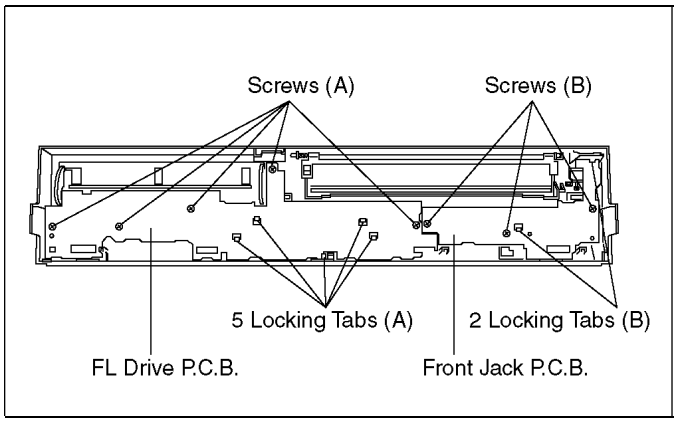
Note:

When attaching Front Panel, in order to hook Cassette Door Opener Lever to Cassette Door, push up cassette door in the direction of arrow and insert a front panel.



14.6. Front Jack P.C.B. & FL Drive P.C.B.

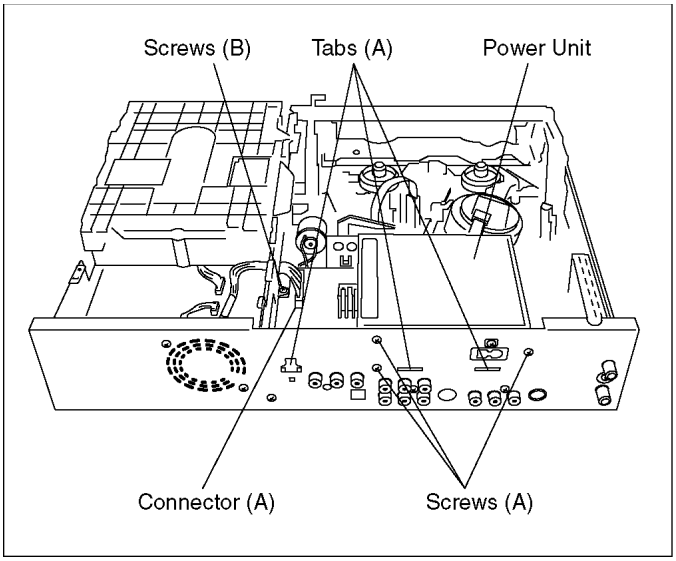
1. Remove one 5 screws (A), and unlock 5 Locking Tabs (A) to remove FL Drive P.C.B.
2. Remove one 3 screws (B), and unlock 2 Locking Tabs (B) to remove Front Jack P.C.B.



14.7. Power Unit and Power P.C.B., Rear Panel & Fan Motor

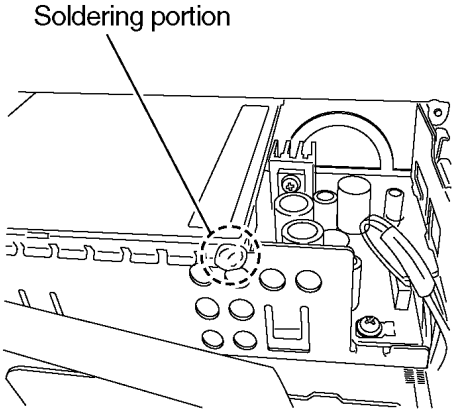
14.7.1. Power Unit

1. Disconnect Connector (A).
2. Remove 3 Screws (A) and 1 Screw (B).
3. Pull Power Unit upward to remove it from hanging 3 tabs (A).

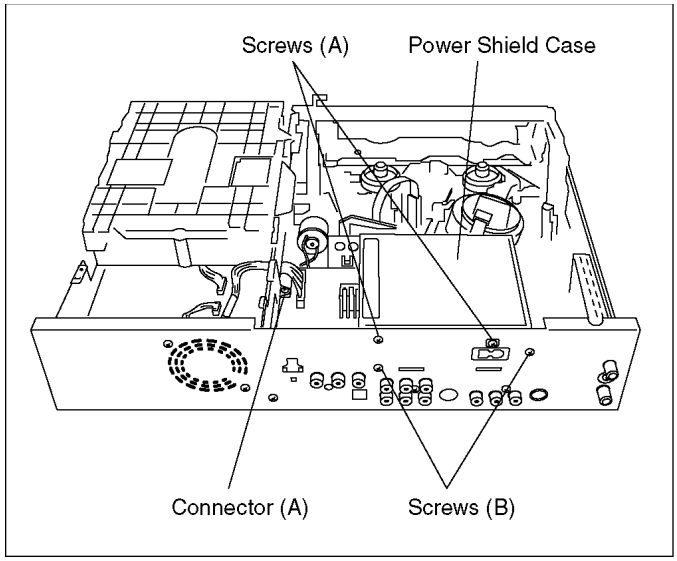


14.7.1.1. Only Power P.C.B.

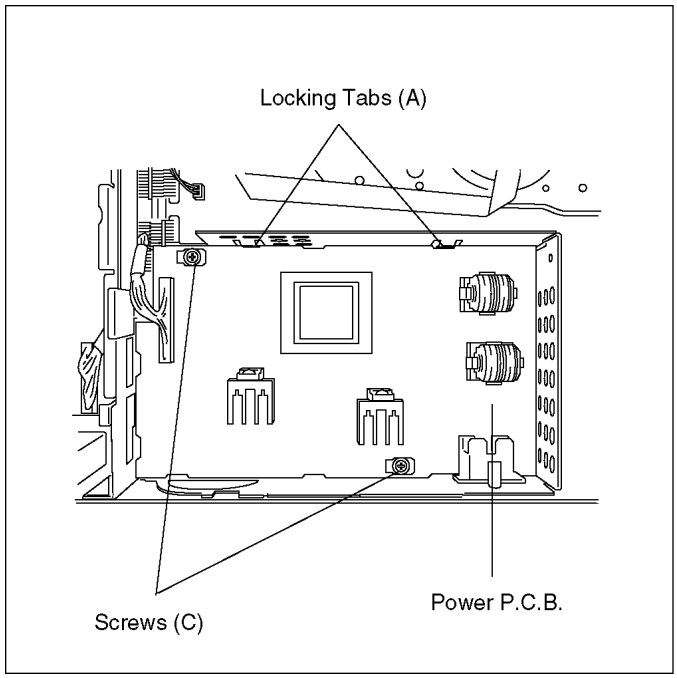
Caution:
In some case, Shield Case of Power Unit is soldered. In this case, remove solder when removing Shield Case and certainly solder Shield Case when installing. If soldering was not done, noises mix into picture.



1. Disconnect Connector (A).
2. Remove 2 Screws (A), loosen 2 Screws (B) and remove Power Shield Case.

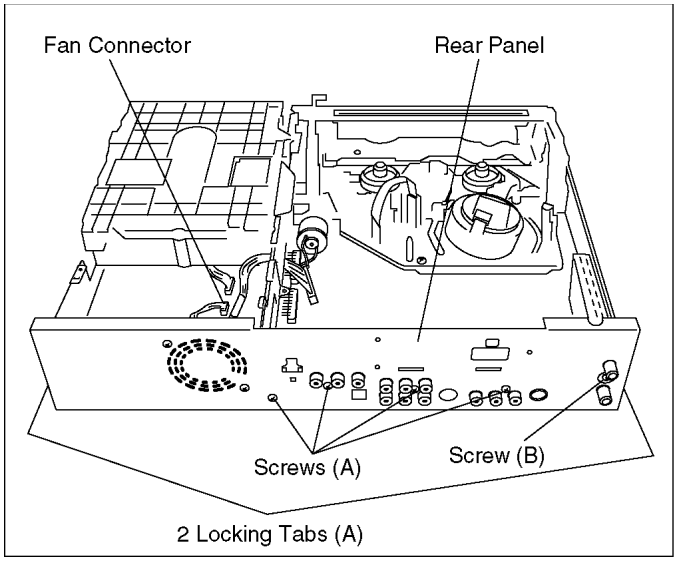


3. Remove 2 Screws (C) and unlock 2 locking Tabs (A) to remove Power P.C.B.



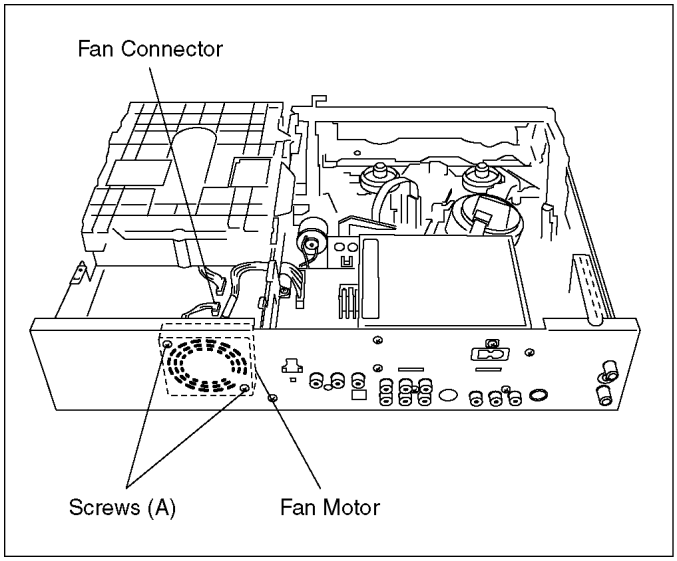
14.7.2. Rear Panel with Fan Motor

1. After removing Power Unit as shown above, disconnect Fan Connector.
2. Remove 4 Screws (A) and 1 Screw (B).
3. Unlock 2 Locking Tabs (A) to remove Rear Panel with Fan Motor.



14.7.2.1. Only Fan Motor

1. Disconnect Fan Connector.
2. Remove 2 Screws (A) to Remove Fan Motor.

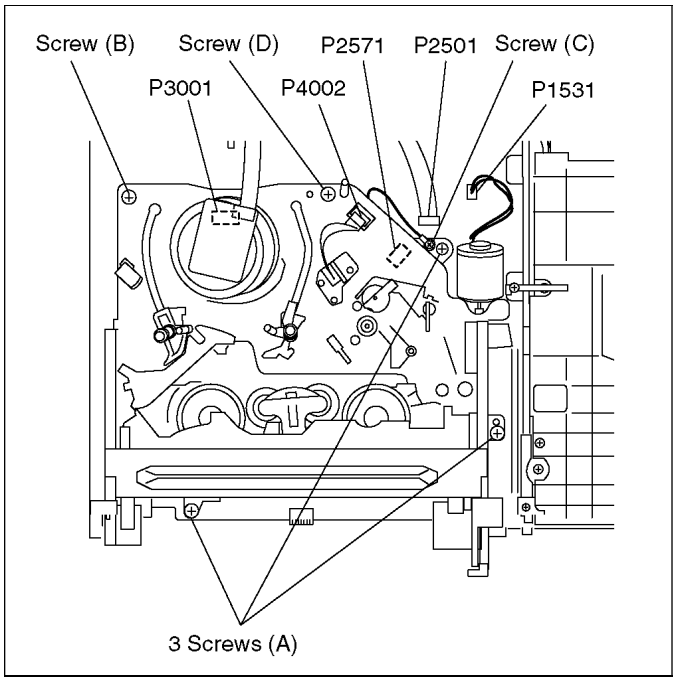


14.8. VTR Mechanism Unit

1. Disconnect 3 Connectors (P1531, P2501 and P4002).
2. Remove 3 Black Screws (A), Screw (B) , Screw (C) and Screw (D).
3. Lift up VTR Mechanism Unit perpendicularly so to disconnect Connectors (P2571 and P3001).

Note:

Pay attention to stiff connections of P2571 and P3001, when removing VTR Mechanism Unit.



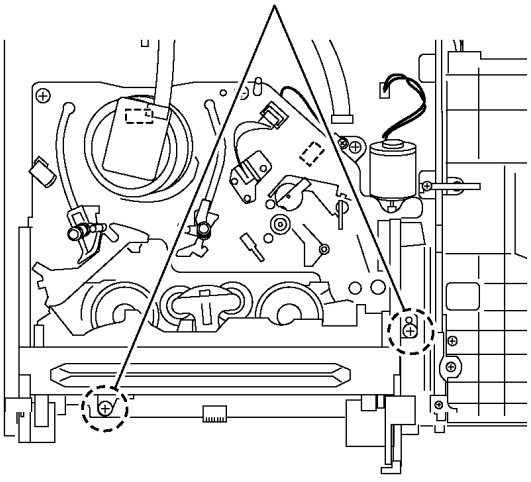
14.8.1. Caution for attaching VTR Mechanism Unit

Caution:

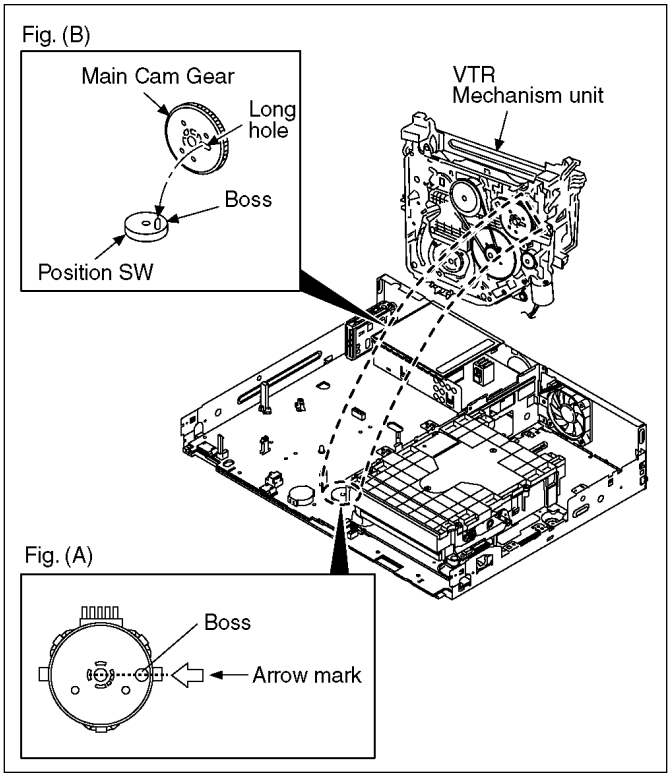
In some case, <u>washer</u> is used for <u>2 Black Screws fixing front side of R4 Mechanism.</u>

In this case, do not mistake washer position when installing R4 Mechanism.

Washer

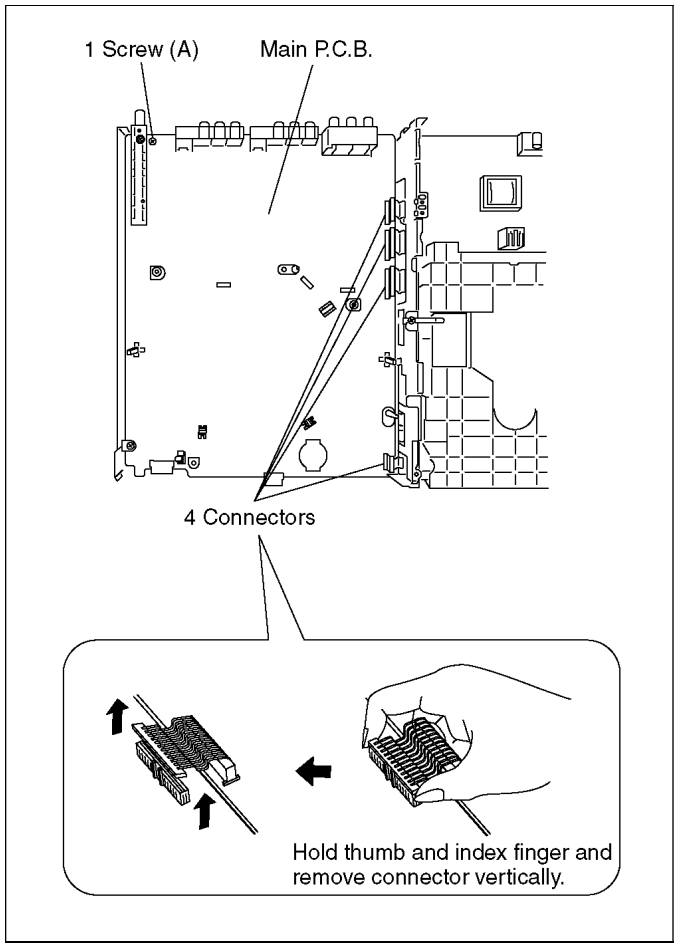


1. Because Position SW should be set to "Eject Position", refer to fig.(A) and set the position switch so that the boss and arrow mark come on a straight line.
2. Attach VTR Mechanism Unit so that Boss of Position SW is put into long hole of Main Cam Gear, refer to Fig. (B).

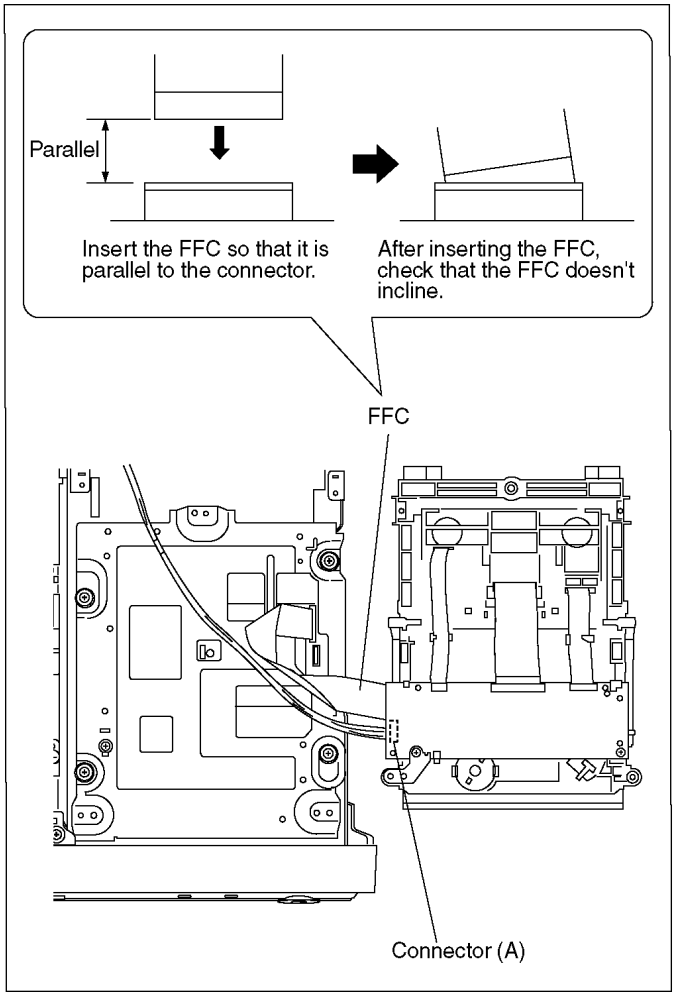


14.9. Main P.C.B.

1. Disconnect 4 Connectors.
2. Remove 1 Screw (A), and remove Main P.C.B.

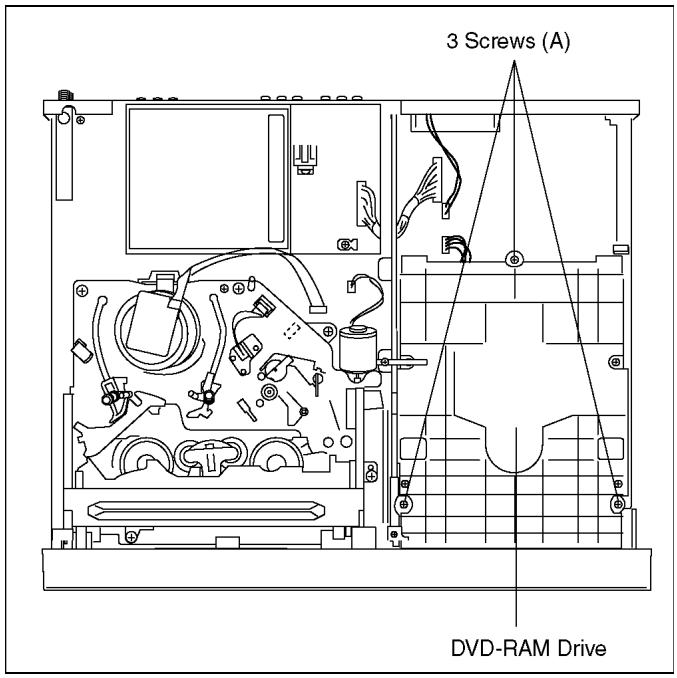


3. Disconnect Connector (A) and FFC from DVD-RAM Drive.


Parallel
Insert the FFC so that it is parallel to the connector.
After inserting the FFC, check that the FFC doesn't incline.
FFC
Connector (A)

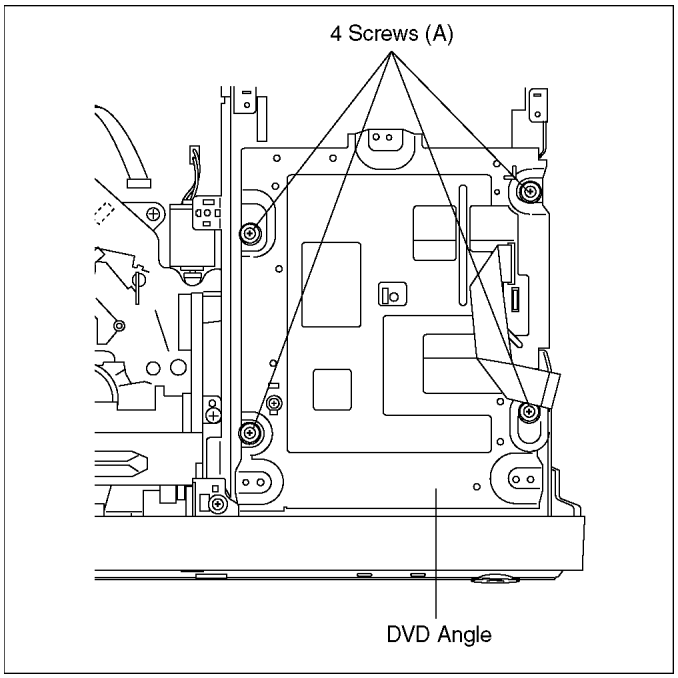
14.10. DVD-RAM Drive

1. Remove 3 Screws (A).
2. Lift up DVD-RAM Drive slightly.



14.11. Digital P.C.B.

1. Remove 4 Screws (A) and DVD Angle.



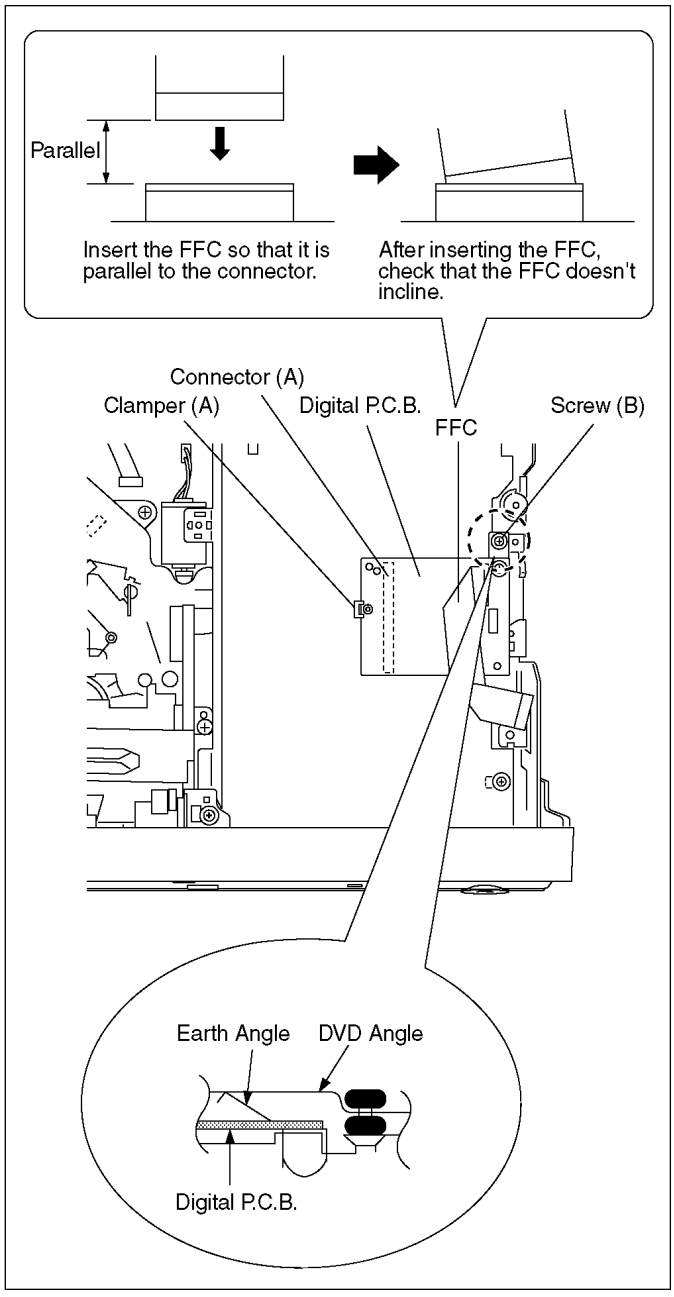
2. Disconnect FFC.
3. Remove Screw (B).
4. Unlock Clamper (A), pay attention to Connector (A), and pull out Digital P.C.B. to disconnect Connector (A).

CAUTION 1:

When replacing Digital P.C.B., pay attention to inserting FFC.

CAUTION 2:

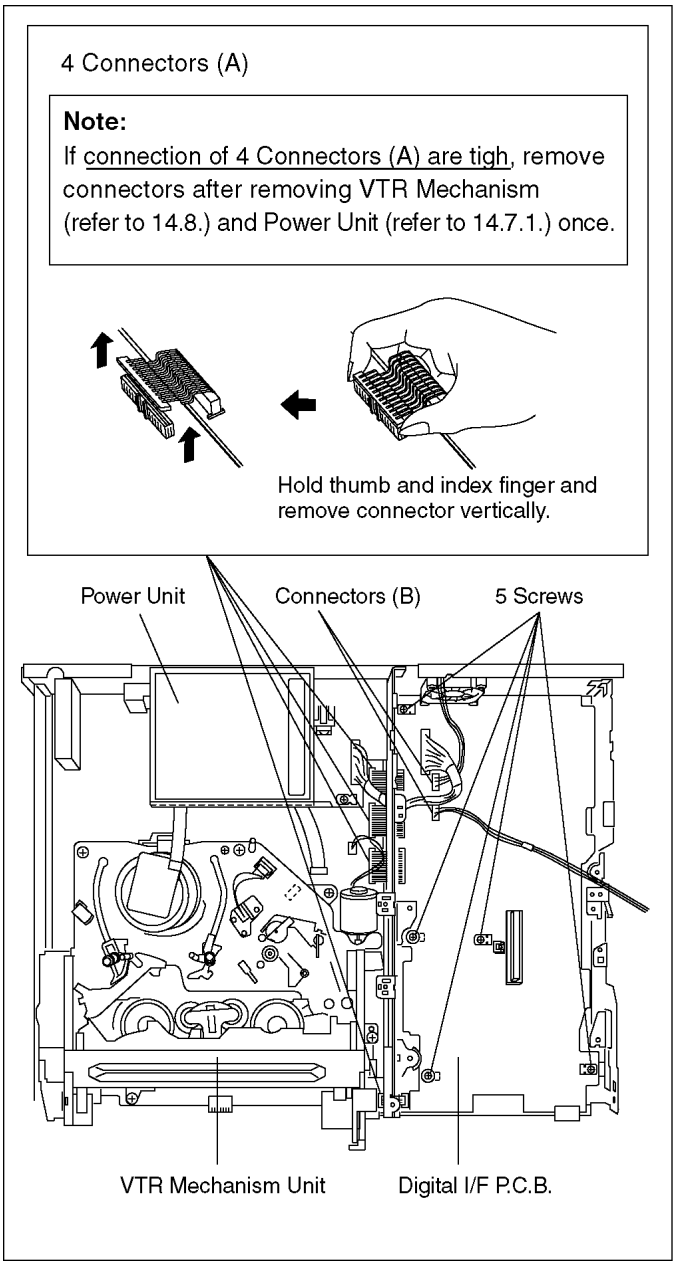
When attaching Digital P.C.B. on to Earth Angle, Earth Angle should be touched to DVD angle as shown below.



14.12. Digital I/F P.C.B.

Note:
If connection of 4 Conenectors (A) are tight, remove connectors after removing VTR Mechanism (refer to 14.8.) and Power Unit (refer to 14.7.1.) once.

1. Remove Fan Motor (refer to 14.7.2.1.).
2. Disconnect 4 Connectors (A) and 2 Connectors (B).
3. Remove the 5 screws.
4. Remove Digital I/F P.C.B.


4 Connectors (A)
Note:
If connection of 4 Connectors (A) are tigh, remove connectors after removing VTR Mechanism (refer to 14.8.) and Power Unit (refer to 14.7.1.) once.
Hold thumb and index finger and remove connector vertically.
Power Unit
Connectors (B)
5 Screws
VTR Mechanism Unit
Digital I/F P.C.B.

15 Service Fixture and Tools

(For DVD)

Part Number	Description	Pcs	Compatibility
RFKZ0125	Extension FFC (Digital P.C.B. - DVD-RAM Drive / 40 Pin)	1	Same as DMR-E50 series
RFKZ0168	Extension Cable (Digital I/F P.C.B. - FAN / 3 Pin)	1	Same as DMR-E50 series
RFKZ0126	Extension Cable (RAM Drive - Digital I/F P.C.B. / 4 Pin)	1	Same as DMR-E30/ES10 series
VFK1729	Extension Cable (Main P.C.B. - Digital I/F P.C.B./13pin/40mm)	1	Same as DMR-E75V series
RFKZ0240	Extension Cable (Main P.C.B. - Digital I/F P.C.B./19pin/40mm)	2	Same as DMR-E75V series
	Extension Cable (Main P.C.B. - Digital I/F P.C.B./19pin/40mm)		
RFKZ0178	Extension Cable (Main P.C.B. - Digital I/F P.C.B./7pin/40mm)	1	Same as DMR-E75V series
RFKZ0260	Extension Cable (Digital I/F P.C.B. - Digital P.C.B. / 88 Pin)	1	Same as DMR-ES10/EH50 series
RFKZ0215	Extension Cable (MainP.C.B. - Front (Jack) P.C.B. / 12 Pin)	1	Same as DMR-E55
RFKZ0239	Extension Cable (Power & Digital I/F P.C.B. - FL Drive P.C.B. / 10 Pin)	1	Same as DMR-E75V series
RFKZ0238	Extension Cable (Main P.C.B. - FL Drive P.C.B. / 8 Pin)	1	Same as DMR-E75V series

(For VHS)

Part Number	Description	Pcs	Compatibility
VFM8080HQFP	NTSC VHS Alignment Tape	1	Same as E75V
VFK0329	Post Adjustment Screwdriver	1	Same as E75V
VFK0330	Fine Adjustment Gear Driver	1	Same as E75V

16 Service Positions

Note:

For description of the disassemblin g procedure, see the section 14.

16.1. Checking and Repairing of Power P.C.B.

1. Top Case

- Remove 4 Screws (A) on side
- Remove 3 Screws (B) on rear
- Remove Top Case

2. Power P.C.B.

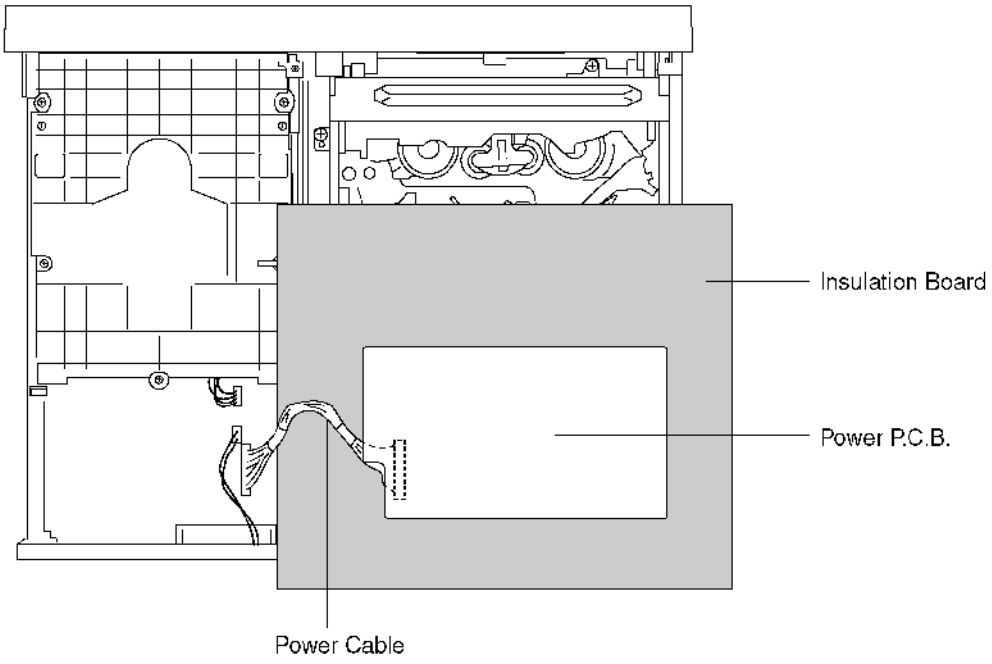
- Disconnect Connector (A) on Power P.C.B.
- Remove 1 Screw (A) fixing upper side of Power Unit
- Remove 1 Screw (A) fixing AC Inlet
- Loosen 1 Screw (B) fixing lower side of Power Unit
- Loosen 1 Screw (B) fixing right side of Power Unit
- Remove Shield Case from Power Unit
- Remove 2 Screws (C) fixing Power P.C.B.
- Unlock 2 Locking Tabs to remove Power P.C.B.
- Put Power P.C.B. on Insulation Board
  Connect Power Cable to Power P.C.B.

Caution 1:

Original screw should be used.

Caution 2:

In some case, Shield Case of Power Unit is soldered.
In this case, remove solder when removing Shield Case and certainly solder Shield Case when installing.
If soldering was not done, noises mix into picture.



16.2. Checking and Repairing of & Digital I/F P.C.B.

1. Top Case
- Remove 4 Screws (A) on side
- Remove 3 Screws (B) on rear
- Remove Top Case

2. Front Panel
- Remove 1 Screw (A) on center.
- Unlock 4 Locking Tabs (A),(B),(C),(D)
- Unlock 3 Locking Tabs (E) on bottom to remove Front Panel

3. Power Unit
- Disconnect Power Connector from Power P.C.B.
- Remove 3 Screws (A) fixing Power Unit with Rear Panel
- Remove Screw (B) fixing Power Unit with Center Chassis
- Pull up Power Unit to remove it from hanging 3 tabs (A)

4. Fan Motor
- Remove Fan Connector from Digital I/F P.C.B.
- Remove 2 Screws fixing Fan Motor to remove Fan Motor

5. DVD-RAM Drive
- Remove 3 Screws (A) fixing DVD-RAM Drive
- Lift up DVD-RAM Drive slightly
- Disconnect Connector and FFC from DVD-RAM Drive
- Remove DVD-RAM Drive and put it beside chassis

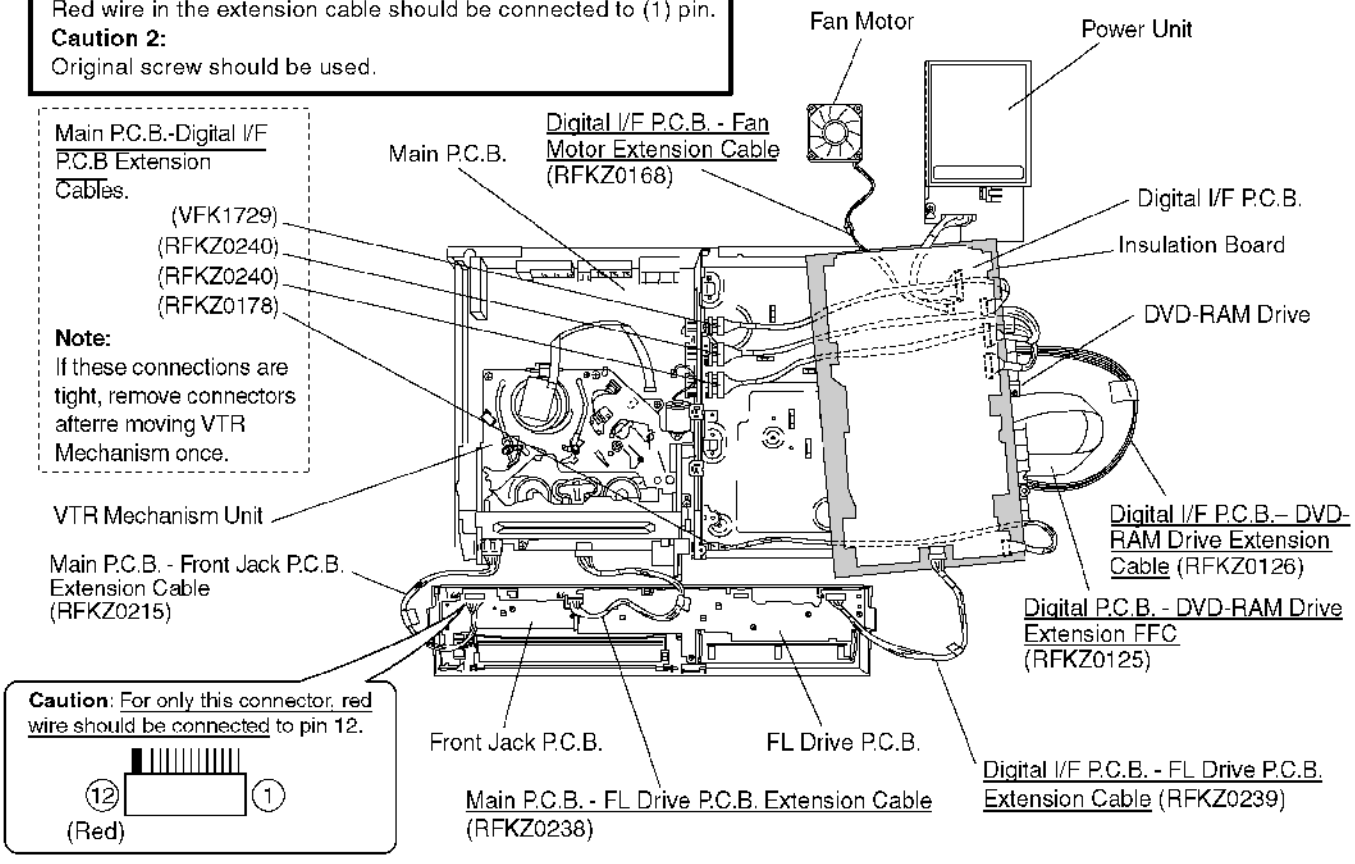
6. Digital P.C.B.
- Remove 4 Screws (A) for DVD Angle
- Remove DVD Angle
- Disconnect FFC from Digital P.C.B.
- Remove 1 Screw fixing Digital P.C.B.
- Leave Digital P.C.B. attached on Digital I/F P.C.B.

7. Digital I/F P.C.B.
- Remove 4 Connectors between Main P.C.B. and Digital I/F P.C.B.
- Remove Fan Connector & Power Connector from Digital I/F P.C.B.
- Remove 5 Screws from Digital I/F P.C.B.
- Remove Digital I/F P.C.B. with Digital P.C.B.

Put an insulated sheet on RAM Drive, and place the Digital I/F P.C.B. on insulation Board so that the foil side faces up

Connect Extension Cables,
*betweenMain P.C.B. and Digital I/F P.C.B. with (RFKZ0178/ RFKZ0240 x 2/ VFK1729),
*between Main P.C.B. and Front Jack P.C.B. with (RFKZ0215),
*between Main P.C.B. and FL Drive P.C.B. with (RFKZ0238),
*between Digital I/F P.C.B. and FL Drive P.C.B. with (RFKZ0239),
*between Digital I/F P.C.B. and DVD-RAM Drive with (RFKZ0126),
*between Digital I/F P.C.B. and Fan Motor with (RFKZ0168),
*between Digital P.C.B. and DVD-RAM Drive with (RFKZ0125).
*between Power Unit-Digital I/F P.C.B. with Original Cable.

Caution 1:
Red wire in the extension cable should be connected to (1) pin.
Caution 2:
Original screw should be used.


Main P.C.B.-Digital I/F P.C.B Extension Cables.
(VFK1729)
(RFKZ0240)
(RFKZ0240)
(RFKZ0178)
Note:
If these connections are tight, remove connectors afterre moving VTR Mechanism once.
VTR Mechanism Unit
Main P.C.B. - Front Jack P.C.B. Extension Cable (RFKZ0215)
Caution: For only this connector, red wire should be connected to pin 12.
12
1
(Red)
Main P.C.B.
Digital I/F P.C.B. - Fan Motor Extension Cable (RFKZ0168)
Fan Motor
Power Unit
Digital I/F P.C.B.
Insulation Board
DVD-RAM Drive
Digital I/F P.C.B.– DVD-RAM Drive Extension Cable (RFKZ0126)
Digital P.C.B. - DVD-RAM Drive Extension FFC (RFKZ0125)
Front Jack P.C.B.
FL Drive P.C.B.
Main P.C.B. - FL Drive P.C.B. Extension Cable (RFKZ0238)
Digital I/F P.C.B. - FL Drive P.C.B. Extension Cable (RFKZ0239)

16.3. Checking and Repairing of Main P.C.B.

1. Top Case
- Remove 4 Screws (A) on side.
- Remove 3 Screws (B) on rear.
- Remove Top Case.

2. Front Panel
- Remove one Screw (A) on center.
- Unlock 4 Locking Tabs (A),(B),(C),(D)
- Unlock 3 Locking Tabs (E) on bottom
- Remove Front Panel

3. Power Unit
- Disconnect Power Connector from Power P.C.B.
- Remove 3 Screws (A) fixing Power Unit with Rear Panel
- Remove Screw (B) fixing Power Unit with Center Chassis
- Pull up Power Unit to remove it from hanging 3 tabs (A)

4. Rear Panel with Fan Motor
- Disconnect Fan Connector
- Remove 4 Screws (A) and 1 Screw (B) fixing Rear Panel
- Unlock 2 Locking Tabs to remove Rear Panel with Fan Motor

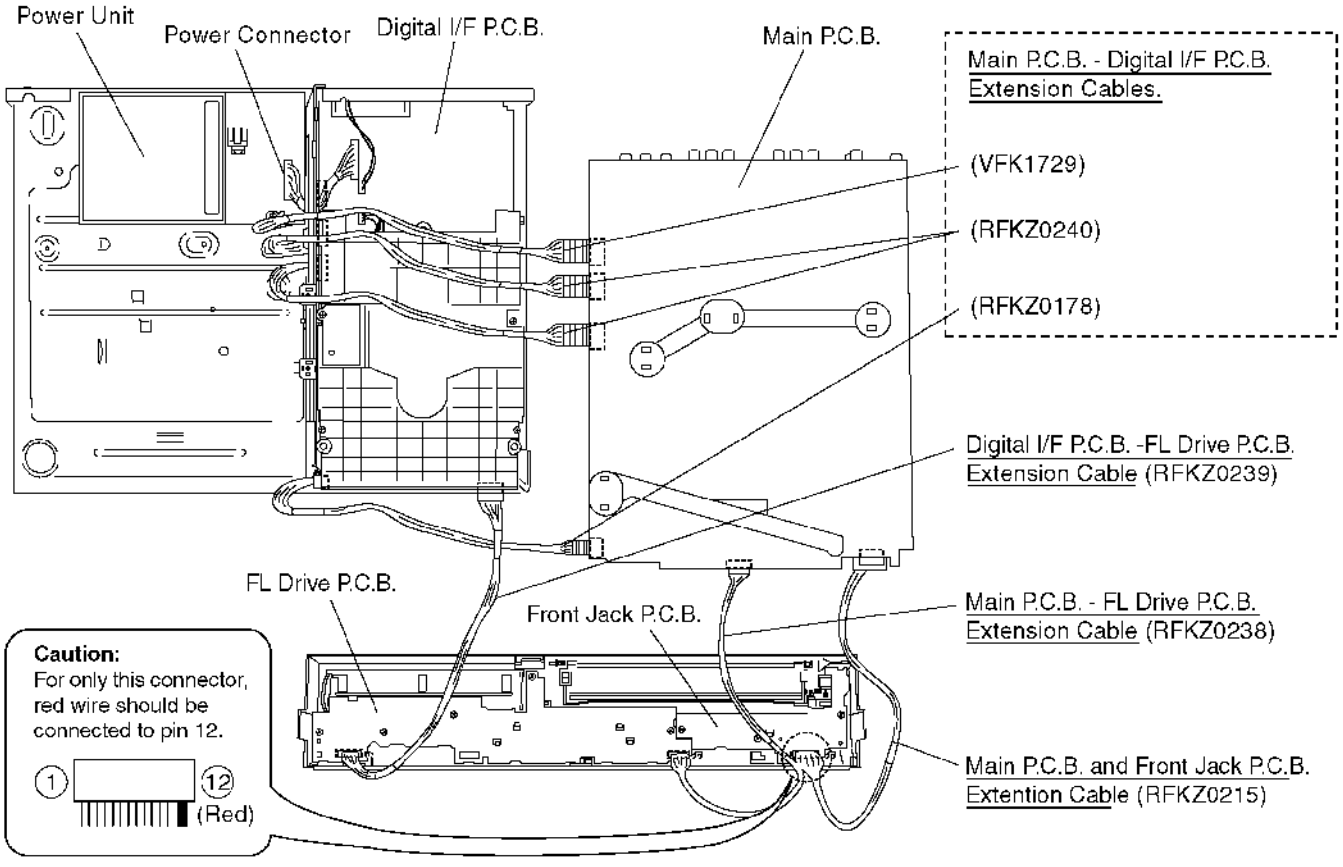
5. VTR Mechanism Unit
- Disconnect 3 Connectors
- Remove 3 Black Screws (A)
- Remove 3 Screws (B), (C) and (D)
- Lift up VTR Mech. Unit to remove it

6. Main P.C.B.
- Disconnect 4 Connectors from Digital I/F P.C.B.
- Remove 1 Screw (A) fixing Main P.C.B. to remove Main P.C.B.
- Attach VTR Mechanism Unit on to Main P.C.B.
- Tighten Screw (C) with Earth Wire
- Tighten Screw (D) beside Screw (C)
- Insert 1 Connector and 2 FFCs

Hold Main P.C.B.with VTR Mechanism, make it upside-down,and put it.
Attach Rear Panel with Fan to Chassis and connect Fan Connector.
Attach Power Unit and connect Power Connector.

Connect Extension Cables,
*between Main P.C.B. and Digital I/F P.C.B. with (RFKZ0178/ RFKZ0240 x 2/ VFK1729),
*between Main P.C.B. and Front Jack P.C.B. with (RFKZ0215),
*between Main P.C.B. and FL Drive P.C.B. with (RFKZ0238),
*between Digital I/F P.C.B. and FL Drive P.C.B. with (RFKZ0239)

Caution 1: Red wire in the extension cable should be connected to (1) pin.
Caution 2: Original screw should be used.
Caution 3: In some case,washer is used for2 Black Screws fixing front side of R4 Mechanism. In this case,do not mistake washer position when installing R4 Mechanism.



16.4. Checking and Repairing of Digital P.C.B.

1. Top Case

- Remove 4 Screws (A) on side
- Remove 3 Screws (B) on rear
- Remove Top Case

2. DVD-RAM Drive

- Remove 3 Screws (A) fixing DVD-RAM Drive
- Lift up DVD-RAM Drive slightly
- Remove Cable between DVD-RAM Drive and Digital I/F P.C.B.
- Disconnect FFC from DVD-RAM Drive
- Remove DVD-RAM Drive and put it beside chassis.

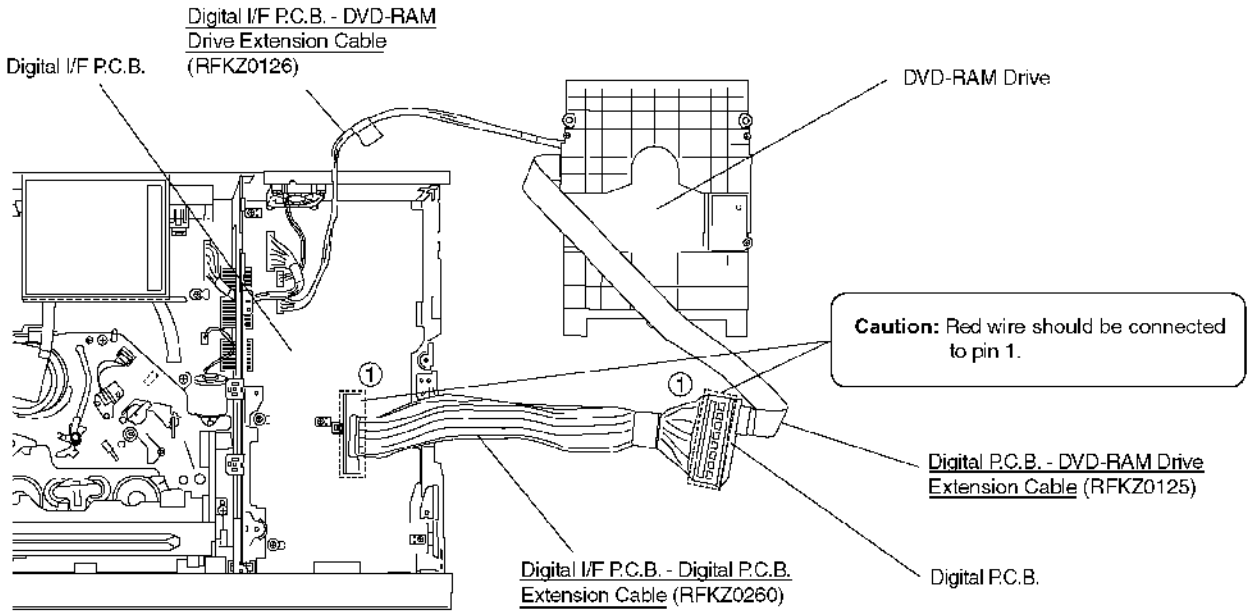
3. Digital P.C.B.

- Remove 4 Screws (A) fixing DVD Angle.
- Remove DVD Angle.
- Disconnect FFC from Digital P.C.B.
- Remove 1 Screw (B) fixing Digital P.C.B.

Unlock Clamper (A) locking Digital P.C.B., pay attention to Connector (A), and pull out Digital P.C.B. to disconnect Connector (A)

Connect Extension Cables,
*between Digital I/F P.C.B. and Digital P.C.B. with (RFKZ0260),
*between Digital I/F P.C.B. and DVD-RAM Drive with(RFKZ0126),
*between Digital P.C.B. and DVD-RAM Drive with (RFKZ0125).

Caution 1: Red wire in the extension cable should be connected to (1) pin.
Caution 2: Original screw should be used.


Digital I/F P.C.B. - DVD-RAM Drive Extension Cable (RFKZ0126)
Digital I/F P.C.B.
DVD-RAM Drive
Caution: Red wire should be connected to pin 1.
①
①
Digital P.C.B. - DVD-RAM Drive Extension Cable (RFKZ0125)
Digital I/F P.C.B. - Digital P.C.B. Extension Cable (RFKZ0260)
Digital P.C.B.

16.5. Checking and DVD-RAM Drive

1. Top Case

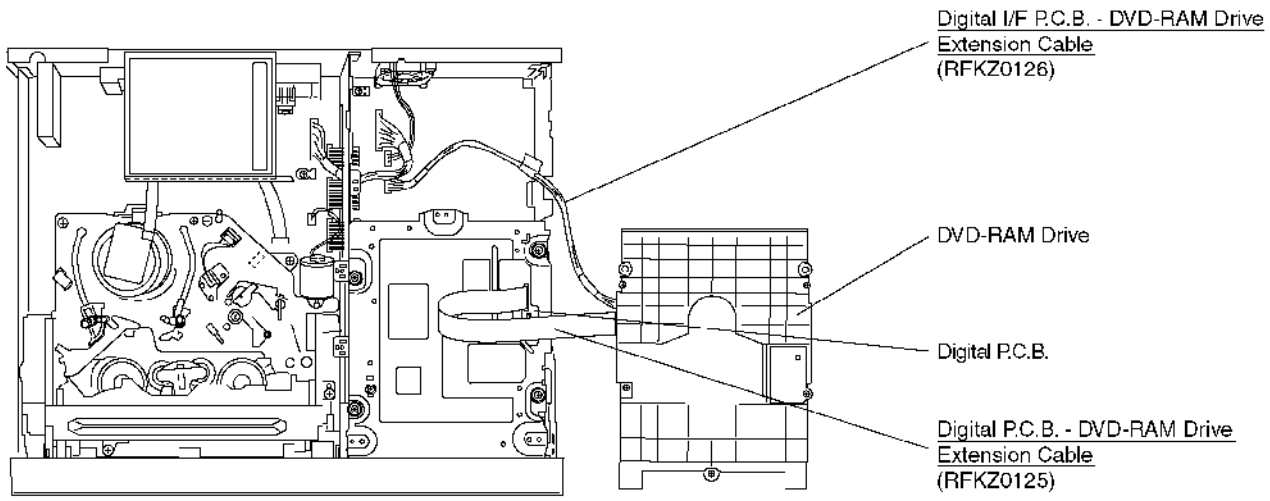
- Remove 4 Screws (A) on side.
- Remove 3 Screws (B) on rear.
- Remove Top Case.

2. DVD-RAM Drive

- Remove 3 Screws (A) fixing DVD-RAM Drive
- Lift up DVD-RAM Drive slightly
- Remove Cable between DVD-RAM Drive and Digital I/F P.C.B.
- Remove FFC between DVD-RAM Drive and Digital P.C.B.
- Remove DVD-RAM Drive and put it beside chassis

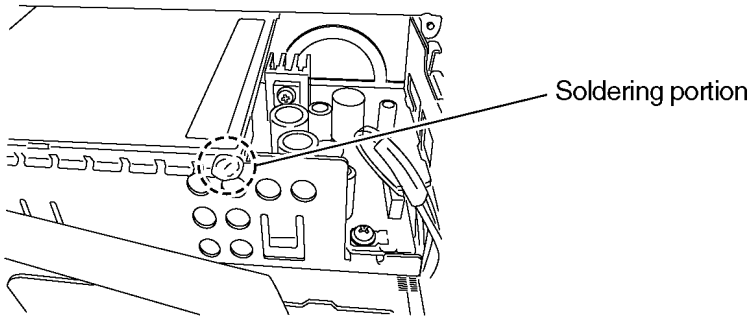
Connect Extension Cables,
*between Digital I/F P.C.B. and DVD-RAM Drive with (RFKZ0126),
*between Digital P.C.B. and DVD-RAM Drive with (RFKZ0125)

Caution 1: Red wire in the extension cable should be connected to (1) pin.
Caution 2: Original screw should be used.


Digital I/F P.C.B. - DVD-RAM Drive Extension Cable (RFKZ0126)
DVD-RAM Drive
Digital P.C.B.
Digital P.C.B. - DVD-RAM Drive Extension Cable (RFKZ0125)

17 (Power P.C.B.) Caution after replacing parts

Caution:
In some case, Shield Case of Power Unit is soldered.
In this case, remove solder when removing Shield Case and certainly solder Shield Case when installing.
If soldering was not done, noises mix into picture.



18 (DVD) Caution after parts replacing parts

18.1. (DVD) After replacing the RAM Drive with new one

After replacing RAM drive unit, TEST mode is not necessary. Please confirm operation for RAM drive

18.2. (DVD) When the unit does not operate normally after replacing the Timer Microprocessor or Main P.C.B.

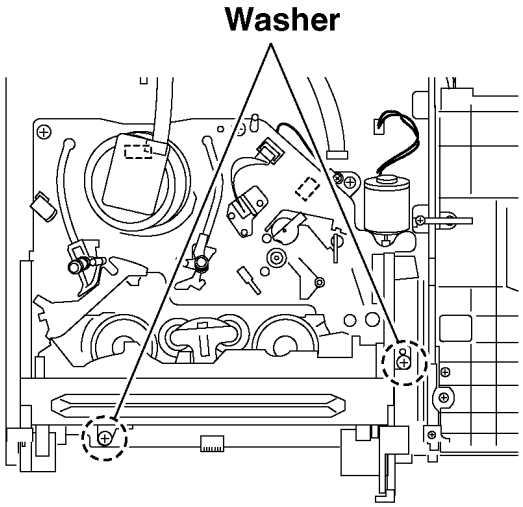
When the unit does not operate normally after replacing the Timer Microprocessor or Main P.C.B. with new one, reset Timer Microprocessor.

Step	Operation	Descriptions
1	While power is ON, short IC37508-4 pin (RESET-OUT) and the GND momentarily.	"RESET (L)" is transmitted to the XRESET terminal of Timer Microprocessor (IC37501-11 pin), then the unit operates normally.

19 (VHS) Caution after replacing parts

Caution for attaching VTR Mechanism Unit

In some case, washer is used for 2 Black Screws fixing front side of R4 Mechanism.
In this case, do not mistake washer position when installing R4 Mechanism.



PG Shifter Automatic Adjustment and X-VALUE & LINEARITY (P2 and P3 Posts) ADJUSTMENT should be performed after replacing DD Cylinder, VHS Microprocessor or Main P.C.B.

Note:

The "X-VALUE & LINEARITY (P2 and P3 Posts) ADJUSTMENT" is not necessary after only replacement of VHS Microprocessor or Main P.C.B.

19.1. (VHS) Adjustment Procedures after replacing DD Cylinder, VHS Microprocessor or Main P.C.B.

ADJUSTMENT PROCEDURE

PROCEDURE	F.I.P. DISPLAY
Turn on the Service Mode 1.Press the FF key and the EJECT key simultaneously for more than 3 seconds.	00000
Activate the Service Mode 2 2. While keep pressing FF key, press the EJECT key twice.	20000
Activate the Entering Mode. 3. Press the EJECT key for more than 3 seconds.	2 00
Set the Mode 2. 4. Press the CH UP key once.	2 100
Insert the alignment cassette tape (VFM8080HQFP) 5. The PG Shifter Adjustment starts automatically.	2 100
When the sequence of the automatic adjustment has been terminated, the following action has been made. **I SUCCEED: The cassette tape is ejected.** **I ERROR: The "F20", "F21", "F22" or "F23" is displayed. Refer to next PG Shifter Adjustment Self-Diagnosis Indication Table regarding the details of the indications.**	
Exit from Service Mode. 6. Press FF and EJECT keys simultaneously in 6 times. Then the FIP becomes normal indication.	10:00 (Normal Indication)

PG SHIFTER AUTOMATIC ADJUSTMENT SELF-DIAGNOSIS INDICATION

F20	NG1 in the PG Shifter Automatic Adjustment (The cylinder rotation is unstable during the automatic adjustment.)
F21	NG2 in the PG Shifter Automatic Adjustment (The vertical sync signal is lacked while over 5 seconds on the alignment tape.)
F22	NG3 in the PG Shifter Automatic Adjustment (The installing position of Heads to the cylinder is our of specification.
F23	NG4 in the PG Shifter Automatic Adjustment (The servo is not locked to the cylinder for more than 10 sec.)

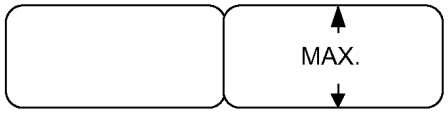
NOTE:

When DD Cylinder was replaced, the Tape Interchangeability adjustment (X-Value Adjustment, P2 and P3 Posts Adjustment) shown below should be performed after the PG Shifter Automatic Adjustment.

19.2. (VHS) X-VALUE & LINEARITY (P2 and P3 Posts) ADJUSTMENT

1. Set the Auto Tracking to off.
   (1) Press the FF key and the EJECT key simultaneously for more than 3 seconds to enter Service Mode.
   (2) While keep pressing FF key, press the EJECT key twice to activate Service Mode 2, then Auto-Tracking is turned off.
2. Perform the X-VALUE ADJUSTMENT
   (1) After turning off the Auto tracking, playback the alifnment Tape and press [(VHS) CH UP] and [(VHS) CH DOWN] keys simultaneously to adjust the tracking to FIX value.
   (2) Adjust A/C Head Base so that the envelope becomes maximum level.
   (It is described on **"5.2. Tape Interchangeability Adjustment" in "R4 Mechanism"** that is separated volume.)

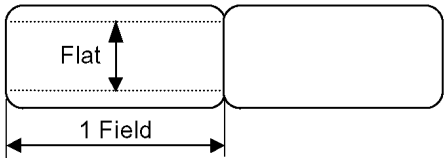
Alignment Tape	VFM8080HQFP
Test Point of Playback Envelope	TW3001 (or TW4502)



Playback Envelope

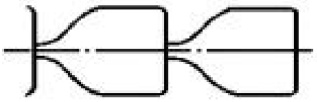
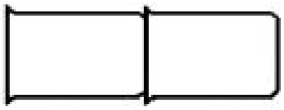
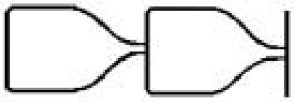
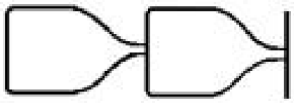
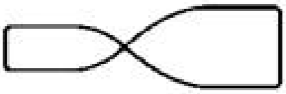
3. Perform the LINEARITY ADJUSTMENT
   (1) After turning off the Auto tracking, playback the alignment Tape and press [(VHS) CH UP] and [(VHS) CH DOWN] keys simultaneously to adjust the tracking to FIX value.
   (2) Adjust the LINEARITY so that the envelope is flat when moving tracking to (+) and (-) directions.

Alignment Tape	VFM8080HQFP
Test Point of Playback Envelope	TW3001 (or TW4502)



Playback Envelope

l Main symptoms and Adjustment point

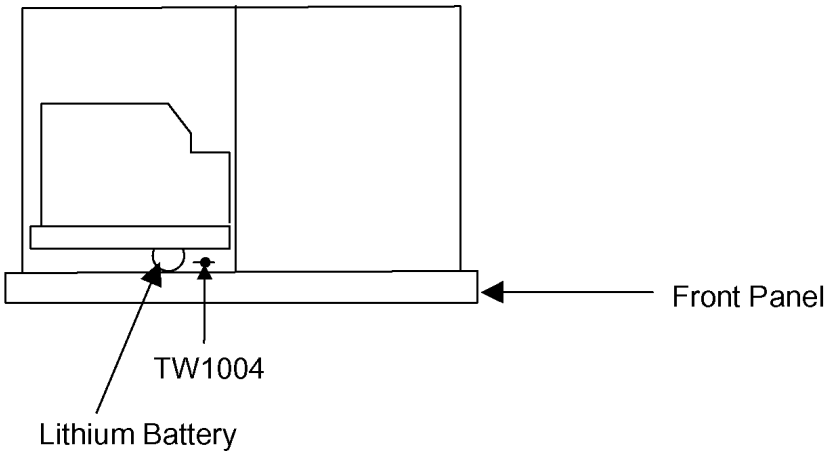
Envelope	Post Name	Adjustment Method
	P2 Post	Turn P2 Post counter-clockwise (Approx. 1/2 revolution)
	P2 Post	Turn P2 Post clockwise (Approx. 1/4 revolution)
	P3 Post	Turn P3 Post clockwise (Approx. 1/2 revolution)
	P3 Post	Turn P3 Post counter-clockwise (Approx. 1/4 revolution)
	P2 Post P3 Post	Turn P2 Post clockwise (Less than 1 revolution) Turn P3 Post counter-clockwise (Less than 1revolution)

19.3. (VHS) Caution after replacing VHS Microprocessor (IC6001)

After replacing VHS Microprocessor (IC6001), turn VHS section into FACTORY mode so that IC6001 should be initialized.

Note:
If you execute Fact operation to VHS Microprocessor (IC6001), parameters of VHS side will be initialized.

1. Pull the AC plug off.
2. Short out circuit between TW1004: (D5V back up line) and GND momentarily. Then a Low pulse signal is sent to IC6001 to turn the unit into FACTORY mode for initializing IC6001.
3. Perform clock setting.



20 (DVD) Standard Inspection Specifications after Making Repairs

After making repairs, we recommend performing the following inspection, to check normal operation.

No.	Procedure	Item to Check
1	Turn on the power, and confirm items pointed out.	Items pointed out should reappear.
2	Insert RAM disc.	The Panasonic RAM disc should be recognized.
3	Enter the EE (TU IN / AV IN - AV OUT) mode.	No abnormality should be seen in the picture, sound or operation.
4	Perform auto recording and playback for one minute using the RAM disc.	No abnormality should be seen in the picture, sound or operation.
5	If a problem is caused by a VCD, DVD-R, DVD-Video, Audio-CD, or MP3, playback the test disc.	No abnormality should be seen in the picture, sound or operation.
6	After checking and making repairs, upgrade the firmware to the latest version.	Make sure that [FIRM_SUCCESS] appears in the FL displays. *[UNFORMAT] display means the unit is already updated to newest same version. Then version up is not necessary.
7	Transfer [9][9] in the service mode setting, and initialize the service settings (return various settings and error information to their default values. The laser time is not included in this initialization).	Make sure that [CLR SERV] appears in the FL display. After checking it, turn the power off.
8	When replacing of RAM drive, transfer [9] [5] in the service mode setting to delete Laser used time.	Make sure that [CLR LASER] appears in the FL display. After that, turn power off.

Use the following checklist to establish the judgement criteria for the picture and sound.

Item	Contents	Check	Item	Contents	Check
Picture	Block noise		Sound	Distorted sound	
	Crosscut noise			Noise (static, background noise, etc.)	
	Dot noise			The sound level is too low.	
	Picture disruption			The sound level is too high.	
	Not bright enough			The sound level changes.	
	Too bright				
	Flickering color				
	Color fading				

21 Voltage and Waveform Chart

Note)

Circuit voltage and waveform described herein shall be regarded as reference information when probing defect point, because it may differ from an actual measuring value due to difference of Measuring instrument and its measuring condition and product itself.

21.1. Power P.C.B.

Ref No.	IC11201						IC11301													
MODE	1	2	3	4	5		1	2	3											
REC	2.4	1.6	0	14.6	-1010		10.2	2.5	0											
PLAY	2.4	1.6	0	14.6	-1009		10.2	2.5	0											
STOP	2.4	1.6	0	14.6	-999		10.2	2.5	0											
Ref No.	IC11501																			
MODE	1	2	3	4	5	6	7	8												
REC	12.3	4.5	1.2	1.3	0.8	0	6.9	12.3												
PLAY	12.3	4.5	1.2	1.3	0.8	0	6.9	12.3												
STOP	12.3	4.5	1.2	1.3	0.8	0	6.9	12.3												
Ref No.	Q11301					Q11501														
MODE	1	2	3	4		1	2	3	4	5	6									
REC	11.2	10.2	0	1.6		7.4	7.4	6.9	12.3	7.4	7.4									
PLAY	11.2	10.2	0	1.6		7.4	7.4	6.9	12.3	7.4	7.4									
STOP	11.2	10.2	0	1.6		7.4	7.4	6.9	12.3	7.4	7.4									

21.2. Digital I/F P.C.B.

Ref No.	IC15002									IC15003										
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8			
REC	12.3	0	1.3	4.1	0	1.1	0.8	3.9		12.2	4.4	1.2	1.2	1.2	0	7.5	12.2			
PLAY	12.3	0	1.3	4.1	0	1.1	0.8	3.8		12.2	4.4	1.2	1.2	1.2	0	7.7	12.3			
STOP	12.3	0	1.3	4.1	0	1.1	0.8	3.8		12.3	4.4	1.2	1.2	1.2	0	7.7	12.3			
Ref No.	IC15004									IC31502										
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5						
REC	12.3	4.5	1.2	1.2	0.8	0	10.8	12.3		5.8	4.9	3.3	-	0						
PLAY	12.3	4.5	1.2	1.2	0.8	0	10.9	12.3		5.8	4.9	3.3	-	0						
STOP	12.3	4.5	1.2	1.2	0.8	0	10.9	12.3		5.8	4.9	3.3	-	0						
Ref No.	IC31510						IC37001													
MODE	1	2	3	4	5		1	2	3	4	5	6	7	8						
REC	1.2	0	4.9	5.8	5.0		5.8	1.8	1.8	0	1.8	1.8	1.8	12.3						
PLAY	1.2	0	4.9	5.8	5.0		5.8	1.8	1.8	0	1.8	1.8	1.8	12.3						
STOP	1.2	0	4.9	5.8	5.0		5.8	1.8	1.8	0	1.8	1.8	1.8	12.3						
Ref No.	IC37501																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	4.1	4.9	0	0.7	0.7	4.3	0	0	0	0	4.9	1.5	0	2.0	3.3	4.9	3.3	3.1	3.1	3.2
PLAY	4.1	4.9	0	0.7	0.7	4.3	0	0	0	0	4.9	1.5	0	2.0	3.3	4.9	3.3	3.1	3.1	3.2
STOP	4.1	4.9	0	0.7	0.7	4.3	0	0	0	0	4.9	1.5	0	2.0	3.3	4.9	3.3	3.1	3.1	3.2
Ref No.	IC37501																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	0	0	1.8	0	0	0	0	3.7	3.8	0	0.9	1.6	0	4.9	2.6	0	0	3.3	3.3	3.3
PLAY	0	0	1.8	0	0	0	0	3.7	3.8	0	0.9	1.6	0	4.9	2.6	0	0	3.3	3.3	3.3
STOP	0	0	1.8	0	0	0	0	3.7	3.8	0	0.9	1.6	0	4.9	2.6	0	0	3.3	3.3	3.3
Ref No.	IC37501																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	0	0.1	3.1	3.3	0	0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	0	0	4.9	0	0	0
PLAY	0	0.1	3.1	3.3	0	0	4.9	4.9	4.9	4.9	4.9	2.5	4.9	4.9	0	0	4.9	0	0	0
STOP	0	0.1	3.1	3.3	0	0	4.9	4.9	4.9	4.9	4.9	2.5	4.9	4.9	0	0	4.9	0	0	0
Ref No.	IC37501																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	0	0	4.9	0	0	0	0	4.9	4.9	0	0	0	4.9	0	0	0	0	0	0	4.9
PLAY	0	0	4.9	0	0	0	0	4.9	4.9	0	0	0	4.9	0	0	0	0	0	0	4.9
STOP	0	0	4.9	0	0	0	0	4.9	4.9	0	0	0	4.9	0	0	0	0	0	0	4.9
Ref No.	IC37501																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
REC	0	0	0	0	0	0	0	0	0	0	0	0	4.9	2.6	0	3.8	0	4.7	4.7	0
PLAY	0	0	0	0	0	0	0	0	0	0	0	0	4.9	2.6	0	3.8	0	4.7	4.7	0
STOP	0	0	0	0	0	0	0	0	0	0	0	0	4.9	2.6	0	3.8	0	4.7	4.7	0
Ref No.	IC37501																			
MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
REC	4.9	4.9	0	4.9	4.9	4.9	3.9	4.9	1.8	1.3	0	4.9	1.8	0	0	2.2				
PLAY	4.9	4.9	0	4.9	4.9	4.9	3.9	4.9	1.8	1.3	0	4.9	1.8	0	0	2.2				
STOP	4.9	4.9	0	4.9	4.9	4.9	3.9	4.9	1.8	1.3	0	4.9	1.8	0	0	2.2				
Ref No.	IC37504						IC37505						IC37508							
MODE	1	2	3	4	5		1	2	3	4	5		1	2	3	4	5			
REC	5.7	0	4.9	1.2	3.3		2.3	3.3	0	-	-		0	0	0	4.9	4.9			
PLAY	5.7	0	4.9	1.2	3.3		2.3	3.3	0	-	-		0	0	0	4.9	4.9			
STOP	5.7	0	4.9	1.2	3.3		2.3	3.3	0	-	-		0	0	0	4.9	4.9			
Ref No.	IC45001						IC45002													
MODE	1	2	3	4	5		1	2	3	4	5	6	7	8						
REC	1.3	0	4.9	5.9	5.0		10.6	5.0	5.0	0	5.0	5.0	5.0	12.3						
PLAY	1.3	0	4.9	5.9	5.0		10.6	5.0	5.0	0	5.0	5.0	5.0	12.3						
STOP	1.3	0	4.9	5.9	5.0		10.6	5.0	5.0	0	5.0	5.0	5.0	12.3						

Ref No.	IC45003																			
MODE	1	2	3	4	5	6	7	8												
REC	3.8	2.5	2.5	0	2.5	2.5	3.8	10.6												
PLAY	3.8	2.5	2.5	0	2.5	2.5	3.8	10.6												
STOP	3.8	2.5	2.5	0	2.5	2.5	3.8	10.6												
Ref No.	Q15001								Q15002											
MODE	1	2	3	4	5	6	7	8	1	2	3	4	5	6						
REC	12.3	12.3	12.3	6.1	12.3	12.3	12.3	12.3	5.5	5.6	7.6	12.2	5.5	5.5						
PLAY	12.3	12.3	12.3	6.1	12.3	12.3	12.3	12.3	5.1	5.1	7.7	12.3	5.2	5.2						
STOP	12.3	12.3	12.3	6.1	12.3	12.3	12.3	12.3	5.1	5.1	7.7	12.3	5.2	5.2						
Ref No.	Q15003																			
MODE	1	2	3	4	5	6														
REC	1.1	1.1	10.9	12.3	1.1	1.1														
PLAY	1.1	1.1	10.9	12.3	1.1	1.1														
STOP	1.1	1.1	10.9	12.3	1.1	1.1														
Ref No.	Q33503				Q33504				Q33505				Q37001							
MODE	E	C	B		E	C	B		E	C	B		1	2	3					
REC	3.1	0	2.4		1.8	5.0	1.6		2.4	0	1.8		5.7	12.3	5.1					
PLAY	3.1	0	2.4		1.8	5.0	1.6		2.4	0	1.8		5.7	12.3	5.1					
STOP	3.1	0	2.4		1.8	5.0	1.6		2.4	0	1.8		5.7	12.3	5.1					
Ref No.	QR15001				QR15002				QR15003				QR15004				QR15005			
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B	
REC	0	0	4.9		0	4.4	0		0	0	4.9		0	0	4.9		0	0	4.9	
PLAY	0	0	4.9		0	4.4	0		0	0	4.9		0	0	4.9		0	0	4.9	
STOP	0	0	4.9		0	4.4	0		0	0	4.9		0	0	4.9		0	0	4.9	
Ref No.	QR15007				QR37501				QR37502				QR45006				Q45007			
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B	
REC	0	4.5	0		0	0	4.9		0	0	2.2		0	0	4.9		0	5.7	0	
PLAY	0	4.5	0		0	0	4.9		0	0	2.2		0	0	4.9		0	5.7	0	
STOP	0	4.5	0		0	0	4.9		0	0	2.2		0	0	4.9		0	5.7	0	
Ref No.	Q45008				QR45009															
MODE	E	C	B		E	C	B													
REC	0	5.7	0		0	0	2.3													
PLAY	0	5.7	0		0	0	2.3													
STOP	0	5.7	0		0	0	2.3													

21.3. Main P.C.B.

Ref No.	IC1511					IC1512														
MODE	1	2	3	4		1	2	3	4											
REC	1.2	2.4	3.8	0		0	1.2	4.9	0											
PLAY	1.2	2.4	5.0	0		0	1.2	0.2	0											
STOP	1.2	2.4	5.0	0		0	1.2	0.2	0											
Ref No.	IC2501																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	12.2	0.1	0	0.1	0	0	16.1	0	2.8	1.6	1.6	0.6	1.5	2.4	2.5	2.5	2.5	1.3	5.0	3.8
PLAY	12.2	0.1	0	0.1	0	0	16.2	0	2.8	1.6	1.6	0.6	1.5	2.4	2.5	2.5	2.5	1.3	5.0	3.6
STOP	12.2	0.1	0	0.1	0	0	16.2	0	2.8	1.6	1.6	0.6	1.5	2.4	2.5	2.5	2.5	1.3	5.0	3.6
Ref No.	IC2501																			
MODE	21	22	23	24	25	26	27													
REC	12.2	3.8	3.8	0	3.8	0	0													
PLAY	12.2	3.6	3.6	0	3.6	0	0													
STOP	12.2	3.6	3.6	0	3.6	0	0													
Ref No.	IC3001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	0	0	0	5.1	2.1	2.6	2.8	1.9	1.9	2.3	2.6	1.5	0	2.8	2.7	2.0	2.7	2.0	2.7	0
PLAY	0	0	0	5.1	2.1	2.6	2.8	1.9	1.9	2.3	2.6	1.5	0	2.8	2.7	2.0	2.7	2.0	2.7	0
STOP	0	0	0	5.1	2.1	2.6	2.8	1.9	1.9	2.3	2.6	1.5	0	2.8	2.7	2.0	2.7	2.0	2.7	0
Ref No.	IC3001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	2.7	5.0	2.3	0.1	0	2.9	0	0	2.4	2.8	0.4	2.2	2.0	1.7	3.0	2.3	3.0	2.1	1.4	2.1
PLAY	2.7	5.0	2.3	0.1	0	2.9	0	0	2.4	2.8	0.4	2.2	2.0	1.7	3.0	2.3	3.0	2.1	1.4	2.1
STOP	2.7	5.0	2.3	0	0	3.0	0	0	2.4	2.8	0.4	2.2	2.1	1.7	3.0	2.3	3.0	2.1	1.5	2.1
Ref No.	IC3001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	2.5	2.0	2.1	0	3.2	3.2	5.0	5.0	3.1	5.0	1.9	5.0	2.6	0	1.9	0	2.2	2.2	5.0	5.0
PLAY	2.5	2.0	2.1	0	3.2	3.2	5.0	5.0	3.1	5.0	1.9	5.0	2.6	0	1.9	0	2.2	2.2	5.0	5.0
STOP	2.5	2.0	2.1	0	3.2	3.2	5.0	5.0	0	5.0	1.9	**5.0**	2.6	0	1.9	0	2.2	2.2	5.0	5.0
Ref No.	IC3001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	4.0	2.3	2.2	2.4	2.2	2.4	2.2	1.2	2.0	2.7	0	5.0	0	2.4	2.8	2.2	2.8	0	0	2.6
PLAY	4.0	2.3	2.2	2.4	2.2	2.4	2.2	1.2	2.0	2.7	0	5.0	0	2.4	2.8	2.2	2.8	0	0	2.6
STOP	4.0	2.3	2.2	2.4	2.2	2.4	2.2	1.2	0	2.7	0	0	2.9	2.4	2.7	2.2	2.8	5.0	0	2.4
Ref No.	IC3001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
REC	0.7	0	3.2	4.9	2.4	2.3	2.4	0	0	0	0	5.1	0.5	2.6	2.5	2.5	0	2.3	0	2.6
PLAY	0.7	0	3.2	4.9	2.4	2.3	2.4	0	0	0	0	5.1	0.5	2.6	2.5	2.5	0	2.3	0	2.6
STOP	0.7	0	3.2	5.0	2.3	2.3	2.3	0	2.3	2.3	2.3	5.1	0.6	2.5	2.5	2.5	0	2.3	0	2.6
Ref No.	IC3002																			
MODE	1	2	3	4	5															
REC	5.7	4.6	5.1	2.7	0															
PLAY	5.7	4.6	5.1	2.7	0															
STOP	5.7	4.6	5.1	2.7	0															

Ref No.	IC3701																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	1.8	0	2.7	5.0	1.8	4.8	1.4	4.7	0.1	2.7	0	1.4	4.8	1.4	0	0	2.7	0	1.4	4.8
PLAY	1.8	0	2.7	5.0	1.8	4.8	1.4	4.7	0.1	2.7	0	1.4	4.8	1.4	0	0	2.7	0	1.4	4.8
STOP	1.8	0	2.7	5.0	1.8	4.8	1.4	4.7	0.1	2.7	0	1.4	4.8	1.4	0	0	2.7	0	1.4	4.8
Ref No.	IC3701																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	1.4	0	0.1	2.7	4.9	1.8	1.8	2.0	2.0	2.2	0	2.2	2.2	2.2	2.2	1.7	1.7	0	1.9	5.0
PLAY	1.4	0	0.1	2.7	4.9	1.8	1.8	2.0	2.0	2.2	0	2.2	2.2	2.2	2.2	1.7	1.7	0	1.9	5.0
STOP	1.4	0	0.1	2.7	4.9	1.8	1.8	2.0	2.0	2.2	0	2.2	2.2	2.2	2.2	1.7	1.7	0	1.9	5.0
Ref No.	IC3701																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	2.8	0	2.8	4.9	2.8	2.8	1.8	4.7	2.8	0	2.8	4.9	2.8	2.9	1.0	0	3.8	3.7	5.0	0.1
PLAY	2.8	0	2.8	4.9	2.8	2.8	1.8	4.7	2.8	0	2.8	4.9	2.8	2.9	1.0	0	3.9	3.8	5.0	0.1
STOP	2.8	0	2.8	4.9	2.8	2.8	1.8	4.7	2.8	0	2.8	4.9	2.8	2.9	1.0	0	3.9	3.8	5.0	0.1
Ref No.	IC3701																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	0	0.8	0.8	5.0	1.3	0	1.8	0	2.1	0	1.3	5.0	1.3	0	2.1	0	0	5.0	0	0
PLAY	0	0.8	0.8	5.0	1.3	0	1.8	0	2.1	0	1.3	0	1.3	0	0	0	0	5.0	0	0
STOP	0	0.8	0.8	5.0	1.3	0	1.8	0	2.1	0	1.3	0	1.3	0	0	0	0	5.0	0	0
Ref No.	IC3703							IC3902												
MODE	1	2	3	4	5	6		1	2	3	4	5	6							
REC	0	2.1	5.0	2.9	0	2.8		0	1.4	5.0	2.2	0	1.3							
PLAY	0	2.1	5.0	2.9	0	2.8		0	1.4	5.0	2.2	0	1.3							
STOP	0	2.1	5.0	2.9	0	2.8		0	1.4	5.0	2.2	0	1.3							
Ref No.	IC4501																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	2.3	0	2.3	0	0	2.5	2.1	0	0	0	0	2.1	0	0	0	2.7	0.6	2.6	2.6	2.1
PLAY	2.3	0	2.3	0	0	2.5	2.1	0	0	0	0	2.1	0	0	0	2.7	0.6	2.6	2.6	2.1
STOP	2.3	0	2.3	0	0	2.5	2.1	0	0	0	0	2.1	0	0	0	2.7	0.6	2.6	2.6	2.1
Ref No.	IC4501																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	2.0	2.1	0	2.1	5.1	2.1	0	4.3	3.9	3.7	1.1	2.5	2.6	0.8	2.6	0	2.0	0	0	5.1
PLAY	2.0	2.1	0	2.1	5.1	2.1	0	4.3	3.9	3.7	1.1	2.5	2.6	0.8	2.6	0	2.0	0	0	5.1
STOP	2.1	2.1	0	2.1	5.1	2.1	0	4.3	1.8	1.8	0	2.6	2.6	0.8	2.6	0	2.0	0	0	5.1
Ref No.	IC4501																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	0	2.9	2.4	3.3	1.6	2.5	2.5	2.5	3.6	2.5	5.1	0.1	5.9	0	0	0	5.9	12.1	6.0	0
PLAY	0	2.9	2.4	3.3	1.6	2.5	2.5	2.5	3.6	2.5	5.1	0.1	5.9	0	0	0	5.9	12.1	6.0	0
STOP	0	2.9	2.4	3.3	1.6	2.5	1.6	2.5	3.6	2.5	5.1	0.1	6.0	0	0	0	6.0	12.1	6.1	0
Ref No.	IC4501																			
MODE	61	62	63	64																
REC	2.5	2.4	2.5	2.5																
PLAY	2.5	2.4	2.5	2.5																
STOP	2.6	2.4	2.5	2.5																
Ref No.	IC4801																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
REC	5.9	6.0	5.9	6.0	5.9	0	0	0	0	11.9	6.0	5.9	5.9	6.0	6.0	12.0				
PLAY	5.9	6.0	5.9	6.0	5.9	0	0	0	0	11.9	6.0	5.9	5.9	6.0	6.0	12.0				
STOP	5.9	6.0	5.9	6.0	5.9	0	0	0	0	11.9	6.0	5.9	5.9	6.0	6.0	12.0				
Ref No.	IC4802									IC4803										
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5						
REC	6.0	6.0	5.9	0	5.9	6.0	6.0	12.0		4.6	0	1.2	8.9	12.2						
PLAY	6.0	6.0	5.9	0	5.9	6.0	6.0	12.0		4.6	0	1.2	8.9	12.2						
STOP	6.0	6.0	5.9	0	5.9	6.0	6.0	12.0		4.6	0	1.2	8.9	12.2						
Ref No.	IC4804																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	-	4.4	4.4	-	-	4.5	4.5	3.4	4.4	4.4	4.4	4.4	4.4	4.4	0	4.5	0	4.4	0	3.8
PLAY	-	4.4	4.4	-	-	4.5	4.5	3.4	4.4	4.4	4.4	4.4	4.4	4.4	0	4.5	0	4.4	0	3.8
STOP	-	4.4	4.4	-	-	4.5	4.5	3.4	4.4	4.4	4.4	4.4	4.4	4.4	0	4.5	0	4.4	0	3.8
Ref No.	IC4804																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32								
REC	3.9	0	4.5	4.4	4.4	4.4	4.4	4.5	4.5	8.9	4.4	4.4								
PLAY	3.9	0	4.5	4.4	4.4	4.4	4.4	4.5	4.5	8.9	4.4	4.4								
STOP	3.9	0	4.5	4.4	4.4	4.4	4.4	4.5	4.5	8.9	4.4	4.4								
Ref No.	IC6001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	0	0	0	0	4.9	4.9	4.8	4.6	3.2	0	4.7	4.9	0	4.9	3.8	0	4.8	0	0	4.8
PLAY	0	0	0	0	4.9	4.9	4.8	4.6	3.2	0	0	0	0	4.9	3.8	0	4.8	2.4	0	4.8
STOP	4.8	0	0	0	4.9	4.9	4.8	4.6	3.3	0	0	0	0	4.9	3.8	0	4.8	2.4	0	0
Ref No.	IC6001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	4.9	0	4.3	2.0	0	4.8	0	0	4.9	0	4.8	4.8	0	4.9	1.5	1.3	4.9	-	-	0
PLAY	4.9	0	4.3	2.0	0	4.8	0	0	4.9	0	4.8	4.8	0	4.9	1.5	1.3	4.9	-	-	0
STOP	4.9	0	4.3	2.0	0	0	0	0	4.9	0	4.8	4.8	0	4.9	1.5	1.3	4.9	-	-	0
Ref No.	IC6001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	0	0	0	4.7	4.7	0	1.4	2.1	0	1.7	5.0	1.7	5.1	2.1	1.7	2.0	0	0	0	0
PLAY	0	0	0	4.7	4.7	0	1.4	2.1	0	1.7	5.0	1.7	5.1	2.1	1.7	2.0	0	0	0	0
STOP	0	0	0	4.7	4.7	0	0	2.1	0	1.7	5.0	1.7	5.1	2.1	2.2	2.0	0	0	0	0
Ref No.	IC6001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	0	0	0	0	0	0	0	4.0	2.2	4.2	4.2	4.1	0.1	0	4.6	2.5	2.4	4.8	4.8	4.5
PLAY	0	0	0	0	0	0	0	4.0	2.2	4.2	4.2	4.1	0.1	0	4.6	2.5	2.4	4-8	4.8	0.2
STOP	0	0	0	0	0	0	0	4.0	2.2	4.2	4.2	4.1	0.1	0	4.6	0	2.4	4.8	5.0	0.2

Ref No.	IC6001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
REC	0	0	0	0	0	2.5	2.5	0	0	1.3	2.5	2.5	0	2.3	2.8	2.5	2.5	5.1	4.9	0
PLAY	0	0	0	0	0	2.5	2.5	0	0	1.3	2.5	2.5	0	2.3	2.8	2.5	2.5	5.1	4.9	0
STOP	0	0	0	0	0	2.6	2.6	0	0	1.3	2.5	2.5	0	2.5	2.5	2.5	2.5	5.1	4.9	0
Ref No.	IC6201						IC6301													
MODE	1	2	3	4	5		1	2	3	4										
REC	4.9	4.9	0	-	-		5.0	0	4.6	5.7										
PLAY	4.9	4.9	0	-	-		5.0	0	4.6	5.7										
STOP	4.9	4.9	0	-	-		5.0	0	4.6	5.7										
Ref No.	IC7301																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	-	0.6	2.7	0.5	2.4	2.4	4.5	0	2.5	2.5	0	0	2.8	2.7	2.2	-	3.4	3.4	5.0	-
PLAY	-	0.6	2.7	0.7	2.4	2.4	4.5	0	2.5	2.5	0	0	2.8	2.7	2.2	-	3.4	3.4	5.0	-
STOP	-	0.6	2.7	0.7	2.4	2.4	4.5	0	2.5	2.5	0	0	2.8	2.7	2.2	-	3.4	3.4	5.0	-
Ref No.	IC7301																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32								
REC	2.2	3.4	2.2	5.0	-	1.7	5.0	1.7	2.2	2.2	-	2.2								
PLAY	2.2	3.4	2.2	5.0	-	1.7	5.0	1.7	2.2	2.2	-	2.2								
STOP	2.2	3.4	2.2	5.0	-	1.7	5.0	1.7	2.2	2.2	-	2.2								
Ref No.	IC7401								IC7402											
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8			
REC	3.3	0.6	1.9	0	2.8	0.6	3.3	5.0		5.0	-	0	3.2	4.9	-	-	5.7			
PLAY	3.3	0.6	1.9	0	2.8	0.6	3.3	5.0		5.0	-	0	3.2	4.9	-	-	5.7			
STOP	3.3	0.6	1.9	0	2.8	0.6	3.3	5.0		5.0	-	0	3.2	4.9	-	-	5.7			
Ref No.	Q1501			Q1502			Q3001				Q3004				IC3901					
MODE	E	C		E	C		E	C	B		E	C	B		1	2	3	4	5	6
REC	0	4.6		0	4.9		1.6	5.0	2.2		1.7	5.0	2.4		5.0	0	0.7	0	2.9	2.2
PLAY	0	4.7		0	4.9		1.6	5.0	2.2		1.7	5.0	2.4		0	0	0	0	2.9	2.2
STOP	0	4.7		0	4.9		1.6	5.0	2.2		1.7	5.0	2.4		0	0	0	0	2.9	2.2
Ref No.	Q4001			Q4002			Q4081						Q4084			Q4501				
MODE	E	C	B	E	C	B	E	C	B				E	C	B	E	C	B		
REC	-18.6	0.1	-26.8	-18.7	0	-26.9	0.2	4.9	0.7				5.6	5.5	4.9	12.2	12.1	11.5		
PLAY	0	0	0.7	0	0	0.8	0	0.4	0.4				5.7	0.4	5.7	12.2	12.1	11.5		
STOP	0	0	0.7	0	0	0.8	0	0.4	0.4				5.7	0.4	5.7	12.2	12.1	11.5		
Ref No.	Q4502			Q6305			Q6801						Q7401			Q7402				
MODE	E	C	B	E	C	B	E	C	B				E	C	B	E	C	B		
REC	5.0	5.6	5.8	5.0	5.7	5.8	0	12.0	0				2.4	0	1.7	0	0.1	0.6		
PLAY	5.0	5.6	5.8	5.0	5.7	5.8	0	12.0	0				2.4	0	1.7	0	0.1	0.6		
STOP	5.0	5.7	5.8	5.0	5.7	5.8	0	12.0	0				2.4	0	1.7	0	0.1	0.6		
Ref No.	Q7901			Q7902			Q7903													
MODE	E	C	B	E	C	B	E	C	B											
REC	0	5.5	-0.8	0	-0.8	-0.8	-16.4	-16.3	-15.7											
PLAY	0	5.5	-0.8	0	-0.8	-0.8	-16.4	-16.3	-15.7											
STOP	0	5.5	-0.8	0	-0.8	-0.8	-16.4	-16.3	-15.7											
Ref No.	QR4001			QR4082			QR4501						QR4802			QR4804				
MODE	E	C	B	E	C	B	E	C	B				E	C	B	E	C	B		
REC	5.0	-27.0	4.8	0	0.1	4.8	0	0	4.6				0	0	-0.2	5.7	-0.2	5.7		
PLAY	5.0	4.9	0	0	5.7	0	0	0	4.6				0	0	-0.2	5.7	-0.2	5.7		
STOP	5.0	4.9	0	0	5.7	0	0	0	4.6				0	0	-0.2	5.7	-0.2	5.7		
Ref No.	QR4805			QR4806			QR4807						QR4808			QR4809				
MODE	E	C	B	E	C	B	E	C	B				E	C	B	E	C	B		
REC	0	0	-0.2	0	0	-0.2	0.1	-0.2	0				0	0	-0.2	0	0	-0.2		
PLAY	0	0	-0.2	0	0	-0.2	0.1	-0.2	0				0	0	-0.2	0	0	-0.2		
STOP	0	0	-0.2	0	0	-0.2	0.1	-0.2	0				0	0	-0.2	0	0	-0.2		
Ref No.	QR4810			QR4811			QR4812						QR4813			QR4816				
MODE	E	C	B	E	C	B	E	C	B				E	C	B	E	C	B		
REC	0	11.9	0	0	0	-0.2	0	0	-0.2				0	-0.2	0	0	0	-0.2		
PLAY	0	11.9	0	0	0	-0.2	0	0	-0.2				0	-0.2	0	0	0	-0.2		
STOP	0	11.9	0	0	0	-0.2	0	0	-0.2				0	-0.2	0	0	0	-0.2		
Ref No.	QR6801			QR7401			QR7901													
MODE	E	C	B	E	C	B	E	C	B											
REC	12.2	0	12.0	36.4	36.3	0.1	4.9	4.9	0											
PLAY	12.2	0	12.0	36.4	36.3	0.1	4.9	4.9	0											
STOP	12.2	0	12.0	36.4	36.3	0.1	4.9	4.9	0											

21.4. FL Drive P.C.B.

Ref No.	IC7502																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	4.8	2.5	4.2	0.8	0	2.2	2.2	4.9	-19.8	-22.7	-19.7	-19.7	-28.5	-25.6	-19.7	-19.7	-28.5	4.9	-19.7	-28.5
Ref No.	IC7502																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	-25.6	-22.6	-28.5	-10.8	-19.7	-7.9	-16.8	-11.0	-16.8	-19.7	-22.7	-5.0	-10.9	-13.8	-16.8	-28.5	-22.7	-28.5	-28.5	-25.6
Ref No.	IC7502																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	-28.5	-16.8	-19.8	-22.6	-25.6	-28.5	-28.5	-28.5	-28.5	-28.5	-28.5	-28.5	-28.5	-25.7	-25.7	-25.7	-25.7	-25.7	-25.8	-25.7
Ref No.	IC7502																			
MODE	61	62	63	64																
STOP	-25.7	-25.7	-25.7	-29.0																
Ref No.	Q7501				QR7501				QR7503				QR7505							
MODE	E	C	B		E	C	B		E	C	B		E	C	B					
STOP	-25.9	4.9	-25.8		0	4.4	0		0	4.3	0		0	0.1	4.8					

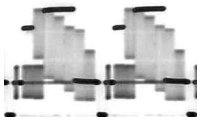
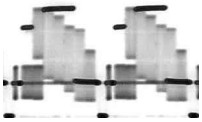
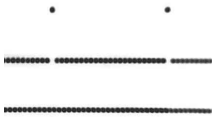
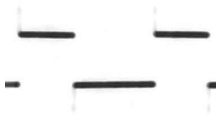
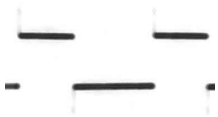
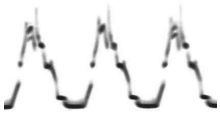
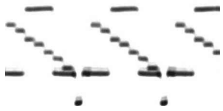
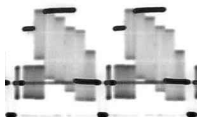
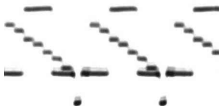
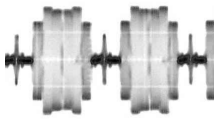
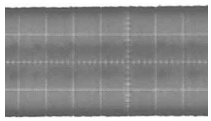
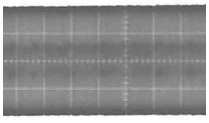
21.5. Front Jack P.C.B.

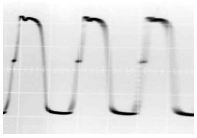
Ref No.	IC7801		
MODE	1	2	3
STOP	4.9	0	4.9

21.6. P9001 Connector

Ref No.	P9001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	5.0	5.0	3.2	3.2	3.2	3.2	3.2	3.1	3.3	0.2	3.2	3.1	3.0	3.2	2.3	-	5.0	-	-	-
PLAY	5.0	5.0	3.2	3.2	3.2	3.2	3.2	3.1	3.3	0.2	3.2	3.2	3.0	3.2	2.3	-	5.0	-	-	-
STOP	5.0	5.0	3.2	3.2	3.2	3.2	3.2	3.1	3.3	0.2	3.2	3.2	3.0	3.2	2.3	-	5.0	-	-	-
Ref No.	P9001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	-	-	-	-	0	-	0	0	2.5	4.9	2.5	-	0	0	0	1.6	0	3.3	2.5	-
PLAY	-	-	-	-	0	-	0	0	2.5	4.9	2.5	-	0	0	0	1.6	0	3.3	2.5	-
STOP	-	-	-	-	0	-	0	0	2.5	4.9	2.5	-	0	0	0	1.6	0	3.3	2.5	-
Ref No.	P9001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	2.5	3.3	0	0	0	0	1.1	5.0	0	-	1.5	5.0	0	3.2	1.0	0	0	0	1.1	-
PLAY	2.5	3.3	0	0	0	0	1.1	5.0	0	-	1.5	5.0	0	3.2	1.0	0	0	0	1.1	-
STOP	2.5	3.3	0	0	0	0	1.1	5.0	0	-	1.5	5.0	0	3.2	1.0	0	0	0	1.1	-
Ref No.	P9001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	0	-	1.0	-	0	3.2	-	3.3	0	3.3	-	3.3	0	3.3	-	1.5	0	-	0	-
PLAY	0	-	1.0	-	0	3.2	-	3.3	0	3.3	-	3.3	0	3.3	-	1.5	0	-	0	-
STOP	0	-	1.0	-	0	3.2	-	3.3	0	3.3	-	3.3	0	3.3	-	1.5	0	-	0	-
Ref No.	P9001																			
MODE	81	82	83	84	85	86	87	88												
REC	0	1.5	1.3	1.5	0	1.5	2.1	1.5												
PLAY	0	1.5	1.3	1.5	0	1.5	2.1	1.5												
STOP	0	1.5	1.3	1.5	0	1.5	2.1	1.5												

21.7. Waveform

IC6001-18(TW2001) REC 5.0Vp-p (10msec.div.)	IC6001-19 PLAY 5.0Vp-p (5msec.div.)	 IC6001-50 REC/PLAY 2.2Vp-p (20usec.div.)	 IC6001-52 REC/PLAY 2.2Vp-p (20usec.div.)	IC6001-79 FF/REW 5.0Vp-p (1msec.div.)
IC6001-80 FF/REW 5.0Vp-p (1msec.div.)	IC6001-86(TL2015) PLAY 0.7Vp-p (0.5msec.div.)	 IC6001-90 REC 5.0Vp-p (10msec.div.)	 IC6001-94 REC 2.4Vp-p (10msec.div.)	 IC6001-95 REC 2.4Vp-p (10msec.div.)
IC6001-97(TW2002) PLAY 4.4Vp-p (5msec.div.)				
 IC2501-22,23,25 PLAY 8.0Vp-p (2msec.div.)				
IC3001-6 REC/PLAY 0.9Vp-p (2msec.div.)	 IC3001-19 REC 1.0Vp-p (20usec.div.)	 IC3001-29 REC/PLAY 2.4Vp-p (20usec.div.)	 IC3001-36 PLAY 0.5Vp-p (20usec.div.)	 IC3001-57 REC/PLAY 0.2Vp-p (20usec.div.)
IC3001-67 PLAY 0.5Vp-p (0.5usec.div.)	IC3001-80 REC/PLAY 0.5Vp-p (10msec.div.)	 IC3001-86 REC 1.4Vp-p (20usec.div.)	IC3001-98 REC 1.5Vp-p (1msec.div.)	
 IC4501-21(TW4501) REC 1.1Vp-p (20usec.div.)	IC4501-53 REC/PLAY 1.6Vp-p (0.5msec.div.)	IC4501-57 REC/PLAY 1.6Vp-p (0.5msec.div.)		



IC11201-1 STOP
80Vp-p (5usec.div)

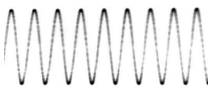
T11101-3 STOP
36Vp-p (5usec.div)

T11101-4 STOP
300Vp-p (5usec.div)

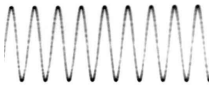
T11101-6 STOP
10Vp-p (2msec.div)

T11101-7 STOP
40Vp-p (5usec.div)

T11101-8 STOP
30Vp-p (5usec.div)

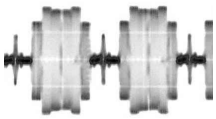


P9001-29,31 REC/PLAY
0.8Vp-p (1msec.div)

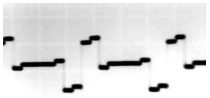


P9001-39,41 REC/PLAY
1.0Vp-p (1msec.div)

P9001-47 REC/PLAY
1.0Vp-p (20usec.div.)



P9001-51 REC/PLAY
0.8Vp-p (20usec.div.)

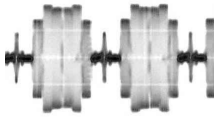


P9001-55 REC/PLAY
0.6Vp-p (20usec.div)

P9001-59 REC/PLAY
1.0Vp-p (20usec.div.)

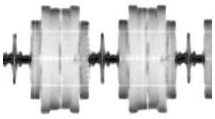
P9001-63 REC/PLAY
0.6Vp-p (20usec.div.)

P9001-83 REC/PLAY
1.0Vp-p (20usec.div.)

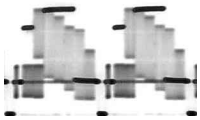


P9001-87 REC/PLAY
0.8Vp-p (20usec.div)

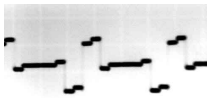
JK3902-3 REC/PLAY
2.0Vp-p (20usec.div)



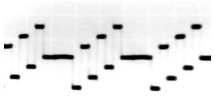
JK3902-4 REC/PLAY
1.5Vp-p (20usec.div)



JK3902-16 REC/PLAY
2.0Vp-p (20usec.div)



JK4801-18 REC/PLAY
1.2Vp-p (20usec.div)



JK4801-19 REC/PLAY
1.2Vp-p (20usec.div)

JK4801-20 REC/PLAY
2.0Vp-p (20usec.div)

22 Abbreviations

22.1. DVD

INITIAL/LOGO		ABBREVIATIONS
A	A0~UP	ADDRESS
	ACLK	AUDIO CLOCK
	AD0~UP	ADDRESS BUS
	ADATA	AUDIO PES PACKET DATA
	ALE	ADDRESS LATCH ENABLE
	AMUTE	AUDIO MUTE
	AREQ	AUDIO PES PACKET REQUEST
	ARF	AUDIO RF
	ASI	SERVO AMP INVERTED INPUT
	ASO	SERVO AMP OUTPUT
	ASYNC	AUDIO WORD DISTINCTION SYNC
B	BCK	BIT CLOCK (PCM)
	BCKIN	BIT CLOCK INPUT
	BDO	BLACK DROP OUT
	BLKCK	SUB CODE BLOCK CLOCK
	BOTTOM	CAP. FOR BOTTOM HOLD
	BYP	BYPATH
	BYTCK	BYTE CLOCK
C	CAV	CONSTANT ANGULAR VELOCITY
	CBDO	CAP. BLACK DROP OUT
	CD	COMPACT DISC
	CDSCK	CD SERIAL DATA CLOCK
	CDSRDATA	CD SERIAL DATA
	CDRF	CD RF (EFM) SIGNAL
	CDV	COMPACT DISC-VIDEO
	CHNDATA	CHANNEL DATA
	CKSL	SYSTEM CLOCK SELECT
	CLV	CONSTANT LINEAR VELOCITY
	COFTR	CAP. OFF TRACK
	CPA	CPU ADDRESS
	CPCS	CPU CHIP SELECT
	CPDT	CPU DATA
	CPUADR	CPU ADDRESS LATCH
	CPUADT	CPU ADDRESS DATA BUS
	CPUIRQ	CPU INTERRUPT REQUEST
	CPRD	CPU READ ENABLE
	CPWR	CPU WRITE ENABLE
	CS	CHIP SELECT
	CSYNCIN	COMPOSITE SYNC IN
	CSYNCOUT	COMPOSITE SYNC OUT
D	DACCK	D/A CONVERTER CLOCK
	DEEMP	DEEMPHASIS BIT ON/OFF
	DEMPH	DEEMPHASIS SWITCHING
	DIG0~UP	FL DIGIT OUTPUT
	DIN	DATA INPUT
	DMSRCK	DM SERIAL DATA READ CLOCK
	DMUTE	DIGITAL MUTE CONTROL
	DO	DROP OUT
	DOUT0~UP	DATA OUTPUT
	DRF	DATA SLICE RF (BIAS)
	DRPOUT	DROP OUT SIGNAL
	DREQ	DATA REQUEST
	DRESP	DATA RESPONSE
	DSC	DIGITAL SERVO CONTROLLER
	DSLF	DATA SLICE LOOP FILTER
	DVD	DIGITAL VIDEO DISC

INITIAL/LOGO		ABBREVIATIONS
E	EC	ERROR TORQUE CONTROL
	ECR	ERROR TORQUE CONTROL REFERENCE
	ENCSEL	ENCODER SELECT
	ETMCLK	EXTERNAL M CLOCK (81MHz/40.5MHz)
	ETSCLK	EXTERNAL S CLOCK (54MHz)
F	FBAL	FOCUS BALANCE
	FCLK	FRAME CLOCK
	FE	FOCUS ERROR
	FFI	FOCUS ERROR AMP INVERTED INPUT
	FEO	FOCUS ERROR AMP OUTPUT
	FG	FREQUENCY GENERATOR
	FSC	FREQUENCY SUB CARRIER
	FSCK	FS (384 OVER SAMPLING) CLOCK
G	GND	COMMON GROUNDING (EARTH)
H	HA0~UP	HOST ADDRESS
	HD0~UP	HOST DATA
	HINT	HOST INTERRUPT
	HRXW	HOST READ/WRITE
I	IECOUT	IEC958 FORMAT DATA OUTPUT
	IPFRAG	INTERPOLATION FLAG
	IREF	I (CURRENT) REFERENCE
	ISEL	INTERFACE MODE SELECT
L	LDON	LASER DIODE CONTROL
	LPC	LASER POWER CONTROL
	LRCK	L CH/R CH DISTINCTION CLOCK
M	MA0~UP	MEMORY ADDRESS
	MCK	MEMORY CLOCK
	MCKI	MEMORY CLOCK INPUT
	MCLK	MEMORY SERIAL COMMAND CLOCK
	MDATA	MEMORY SERIAL COMMAND DATA
	MDQ0~UP	MEMORY DATA INPUT/OUTPUT
	MDQM	MEMORY DATA I/O MASK
	MLD	MEMORY SERIAL COMMAND LOAD
	MPEG	MOVING PICTURE EXPERTS GROUP
O	ODC	OPTICAL DISC CONTROLLER
	OFTR	OFF TRACKING
	OSCI	OSCILLATOR INPUT
	OSCO	OSCILLATOR OUTPUT
	OSD	ON SCREEN DISPLAY
P	P1~UP	PORT
	PCD	CD TRACKING PHASE DIFFERENCE
	PCK	PLL CLOCK
	PDVD	DVD TRACKING PHASE DIFFERENCE
	PEAK	CAP. FOR PEAK HOLD
	PLLCLK	CHANNEL PLL CLOCK
	PLLOK	PLL LOCK
	PWMCTL	PWM OUTPUT CONTROL
	PWMDA	PULSE WAVE MOTOR DRIVE A
	PWMOA, B	PULSE WAVE MOTOR OUT A, B

INITIAL/LOGO		ABBREVIATIONS
R	RE	READ ENABLE
	RFENV	RF ENVELOPE
	RFO	RF PHASE DIFFERENCE OUTPUT
	RS	(CD-ROM) REGISTER SELECT
	RSEL	RF POLARITY SELECT
	RST	RESET
	RSV	RESERVE
S	SBI0, 1	SERIAL DATA INPUT
	SBO0	SERIAL DATA OUTPUT
	SBT0, 1	SERIAL CLOCK
	SCK	SERIAL DATA CLOCK
	SCKR	AUDIO SERIAL CLOCK RECEIVER
	SCL	SERIAL CLOCK
	SCLK	SERIAL CLOCK
	SDA	SERIAL DATA
	SEG0~UP	FL SEGMENT OUTPUT
	SELCLK	SELECT CLOCK
	SEN	SERIAL PORT ENABLE
	SIN1, 2	SERIAL DATA IN
	SOUT1, 2	SERIAL DATA OUT
	SPDI	SERIAL PORT DATA INPUT
	SPDO	SERIAL PORT DATA OUTPUT
	SPEN	SERIAL PORT R/W ENABLE
	SPRCLK	SERIAL PORT READ CLOCK
	SPWCLK	SERIAL PORT WRITE CLOCK
	SQCK	SUB CODE Q CLOCK
	SQCX	SUB CODE Q DATA READ CLOCK
	SRDATA	SERIAL DATA
	SRMADR	SRAM ADDRESS BUS
	SRMDT0~7	SRAM DATA BUS 0~7
	SS	START/STOP
	STAT	STATUS
	STCLK	STREAM DATA CLOCK
	STD0~UP	STREAM DATA
	STENABLE	STREAM DATA INPUT ENABLE
	STSEL	STREAM DATA POLARITY SELECT
	STVALID	STREAM DATA VALIDITY
	SUBC	SUB CODE SERIAL
	SBCK	SUB CODE CLOCK
	SUBQ	SUB CODE Q DATA
	SYSCLK	SYSTEM CLOCK
T	TE	TRACKING ERROR
	TIBAL	BALANCE CONTROL
	TID	BALANCE OUTPUT 1
	TIN	BALANCE INPUT
	TIP	BALANCE INPUT
	TIS	BALANCE OUTPUT 2
	TPSN	OP AMP INPUT
	TPSO	OP AMP OUTPUT
	TPSP	OP AMP INVERTED INPUT
	TRCRS	TRACK CROSS SIGNAL
	TRON	TRACKING ON
	TRSON	TRAVERSE SERVO ON

INITIAL/LOGO		ABBREVIATIONS
V	VBLANK	V BLANKING
	VCC	COLLECTOR POWER SUPPLY VOLTAGE
	VCDCONT	VIDEO CD CONTROL (TRACKING BALANCE)
	VDD	DRAIN POWER SUPPLY VOLTAGE
	VFB	VIDEO FEED BACK
	VREF	VOLTAGE REFERENCE
	VSS	SOURCE POWER SUPPLY VOLTAGE
W	WAIT	BUS CYCLE WAIT
	WDCK	WORD CLOCK
	WEH	WRITE ENABLE HIGH
	WSR	WORD SELECT RECEIVER
X	X	X´ TAL
	XALE	X ADDRESS LATCH ENABLE
	XAREQ	X AUDIO DATA REQUEST
	XCDROM	X CD ROM CHIP SELECT
	XCS	X CHIP SELECT
	XCSYNC	X COMPOSITE SYNC
	XDS	X DATA STROBE
	XHSYNCO	X HORIZONTAL SYNC OUTPUT
	XHINT	XH INTERRUPT REQUEST
	XI	X´ TAL OSCILLATOR INPUT
	XINT	X INTERRUPT
	XMW	X MEMORY WRITE ENABLE
	XO	X´ TAL OSCILLATOR OUTPUT
	XRE	X READ ENABLE
	XSRMCE	X SRAM CHIP ENABLE
	XSRMOE	X SRAM OUTPUT ENABLE
	XSRMWE	X SRAM WRITE ENABLE
	XVCS	X V-DEC CHIP SELECT
	XVDS	X V-DEC CONTROL BUS STROBE
	XVSYNCO	X VERTICAL SYNC OUTPUT

22.2. VHS

443NT [L]	4.43 NTSC Ⓛ
A. COMP	AUDIO COMPONENT SIGNAL
A. COMPO	AUDIO COMPONENT SIGNAL
A. D.P [L]	AUDIO DUBBING PAUSE Ⓛ
A. D/L [L]	AUDIO DUBBING PAUSE Ⓛ
A. DEF [S]	AUDIO DEFEAT
A. DEF [S] [L]	AUDIO DEFEAT
A. DUB P [L]	AUDIO DUBBING PAUSE Ⓛ
A. DUB [H]	AUDIO DUBBING Ⓗ
A. ERASE	AUDIO ERASE
A. H. SW	AUDIO HEAD SWITCHING PULSE
A. HEAD [R]	AUDIO HEAD (REC)
A. HEAD [W]	AUDIO HEAD (PLAY)
A. IN [L]	AUDIO INPUT (L)
A. IN [R]	AUDIO INPUT (R)
A. MUT [H]	AUDIO MUTE Ⓗ
A. MUTE [H]	AUDIO MUTE Ⓗ
A. OUT [L]	AUDIO OUTPUT (L)
A. OUT [R]	AUDIO OUTPUT (R)
A. RF OUT	AUDIO RF SIGNAL OUTPUT
A/VS/S. DATA	AV SW/SERIAL DATA
AC ONLINE	AC ONLINE
AC. O/EE. H	AC ONLINE/EE Ⓗ
AFC S C	AFC S CURVE
AFC [S]	AFC S CURVE
AFC. DEF	AFC DEFEAT
ARFC OUT	AUDIO RF SIGNAL OUTPUT
ART. V	ARTIFICIAL VERTICAL SYNC SIGNAL
ART. V. MM	ARTIFICIAL VERTICAL SYNC SIGNAL MONO MULTI
ART. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL Ⓗ/NORMAL
AT. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL
ATSW/TEST/NOR/SE	TEST/NORMAL/SERVICE
AUDIO IN [L]	AUDIO INPUT (L)
AUDIO IN [R]	AUDIO INPUT (R)
AUDIO OUT [L]	AUDIO OUTPUT (L)
AUDIO OUT [R]	AUDIO OUTPUT (R)
AUDIO SELECT [H]	AUDIO SELECT Ⓗ
AUDIO. L	AUDIO (L)
AUDIO. R	AUDIO (R)
AV CNT	AV CONTROL
AV CTL	AV CONTROL
AV CTL/S. CLK	AV CONTROL/SERIAL CLOCK
AV. C.M.	AV CONTROL MODE
AVCNT/METER. R	AV CONTROL/LEVEL METER (R)
AVSW/METER. L	AV SW/LEVEL METER (L)
B MODE. H	B MODE Ⓗ
B.G.P	BURST GATE PULSE
BACKUP 5V	BACK UP 5V
BAND. U.E.	BAND U
BANDVL. D	BAND VL
BI/MI [L]	BILINGUAL/MIX Ⓛ
BIL	BILINGUAL
BIL [L]	BILINGUAL Ⓛ
BIL. [H]	BILINGUAL Ⓗ
BIL/M1 [L]	BILINGUAL Ⓛ
BS CLOCK	BS CLOCK
BS DATA	BS DATA
BS LCH IN	BS L CHANNEL INPUT
BS MIX [H]	BS MIX Ⓗ
BS MON [H]	BS MONITOR Ⓗ
BS MONI [H]	BS MONITOR Ⓗ
BS RCH IN	BS R CHANNEL INPUT
BS VIDEO	BS VIDEO SIGNAL
BS VIDEO/BS1	BS VIDEO SIGNAL
BS [H]	BS Ⓗ
BS. LEVEL	BS LEVEL
BS. M [H]	BS MONITOR Ⓗ
BS/VTR [H]	BS/VTR Ⓗ
BUS CLK	BUS CLOCK
BUS LSN	BUS LISTEN
BUS TLK	BUS TALK
BUZZER	BUZZER
CAP EC	CAPSTAN TORQUE CONTROL
CAP M GND	CAPSTAN MOTOR GND
CAP. ET	CAPSTAN TORQUE CONTROL
CAP. FG1	CAPSTAN FG1 PULSE
CAP. FG2	CAPSTAN FG2 PULSE
CAS. SW	CASSETTE SW
CCN	PLAYBACK CONTROL SIGNAL (–)
CCP	PLAYBACK CONTROL SIGNAL (+)
CHM	CONTROL SIGNAL (+)
CHP	CONTROL SIGNAL (–)
CINEM [L]	CINEMA Ⓛ
CINEMA [L]	CINEMA Ⓛ
CINEMA/MIX	CINEMA/MIX
CKL	RATCH LOCK
CKS	SHIFT LOCK
CL	CLOCK
CLK	CLOCK
CLK (C.G)	CLOCK
CLOCK. IN	CLOCK INPUT
CLP	CLAMP
COL/B/W/NOR	COLOUR/BLACK & WHITE/NORMAL
COLOR [H]	COLOUR Ⓗ
CONV	CONVERTOR
CS	CHIP SELECT
CTL GND	CONTROL GND
CTL HEAD [+]	CONTROL HEAD (+)
CTL HEAD [–]	CONTROL HEAD (–)
CTL [+]	CONTROL HEAD (+)
CTL [–]	CONTROL HEAD (–)
CUE BIAS	CUE BIAS
CURRENT LIM	CURRENT LIMMITER
CYL ET	CYLINDER TORQUE CONTROL

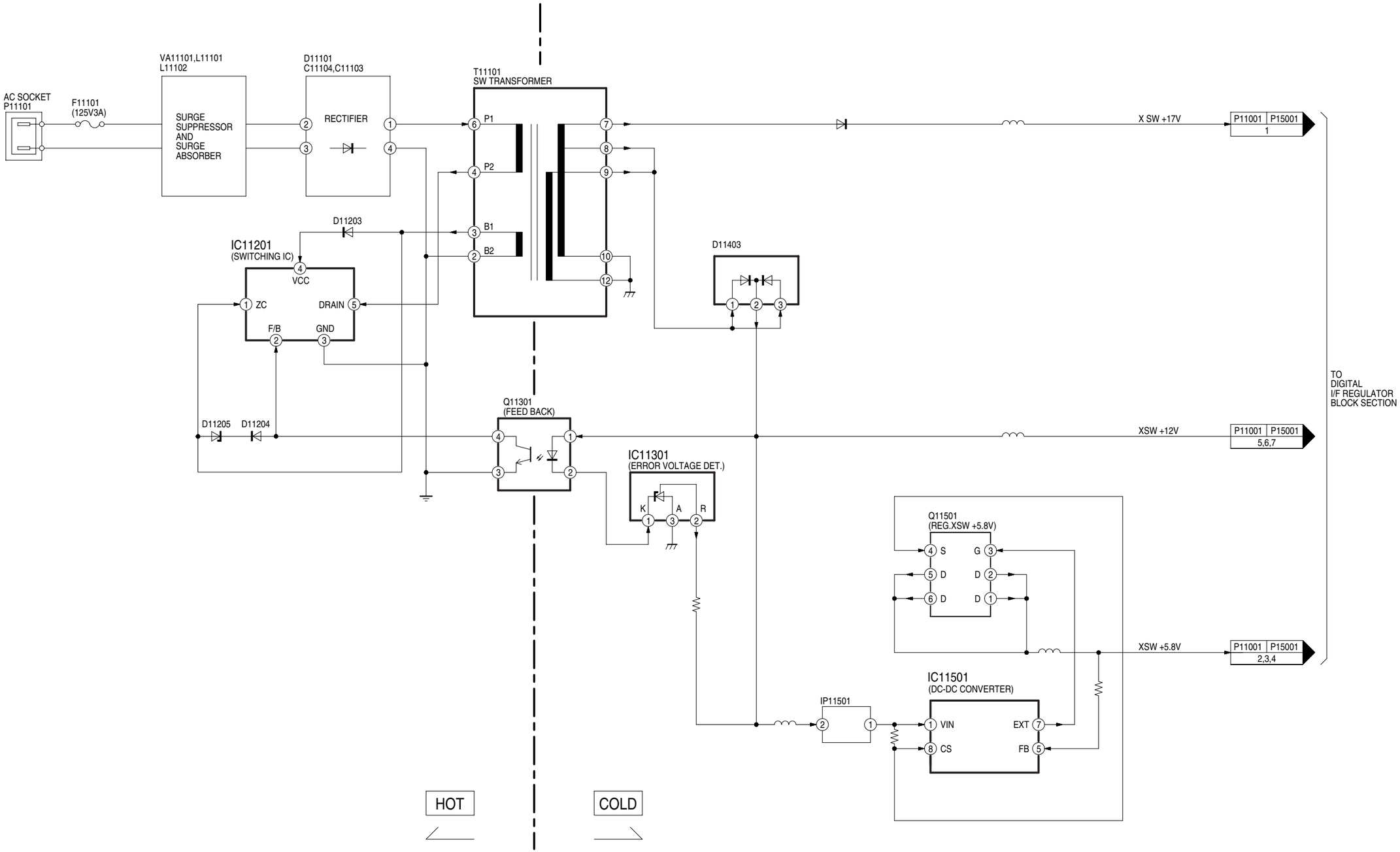
CYL GND	CYLINDER GND
D.F.M. REC [H]	DELAIED FM RECORDING Ⓗ
D. FM REC [L]	DELAIED FM RECORDING Ⓛ
D. GND	DIGITAL GND
D. REC [H]	DELAYED RECORDING Ⓗ
D4/S. LED	D4/STILL LED
D4/STILLED	D4/STILL LED
DAC [CLK]	TUNER DAC (CLOCK)
DAC/FSCS	TUNER DAC/FS CHIP SELECT
DAREC [H]	DELAYED AUDIO RECORDING Ⓗ
DATA	DATA
DECODER [L]	DECODER (L)
DECODER [R]	DECODER (R)
DEW	DEW
DEW SNS	DEW SENSOR
DFMRE [H]	DELAYED FM AUDIO RECORDING Ⓗ
E. REC 5V	EXCEPT RECORDING 5V
EC	ERROR TORQUE CONTROL
ECR	ERROR TORQUE CONTROL REFERENCE VOLTAGE
EDT TRIG [L]	EDIT TRIGGER Ⓛ
EDIT [H]	EDIT Ⓗ
EE [H]	EE Ⓗ
EE [H]/INS [M]	EE Ⓗ/INSERT Ⓜ
EE. VV. TR	EE/VV/TRICK PLAY
EJECT. PO	EJECT POSITION
EJECT/VDET	EJECT/REVERSE SLOW LOCK
ENV. SEL	ENVELOPE SELECT
ENVE. OUT	ENVELOPE OUTPUT
ENVE. SEL	ENVELOPE SELECT
ENV SELECT	ENVELOPE SELECT
EP [H]	LP Ⓗ
EP/LP [H]	LP Ⓗ
EP/LP/SP	LP/SP
EP/SS [H]	LP/SLOW/STILL/STOP Ⓗ
EPROMCS	EPROM CHIP SELECT
EX. REC 5V	EXCEPT RECORDING 5V
FF/REW [L]	FIRST FORWARD/REWIND Ⓛ
FG1 IN	FG1 PULSE INPUT
FG2 IN	FG2 PULSE INPUT
FILTER ADJUSTMENT	FILTER ADJUSTMENT
FLY ERASE [H]	FLYING ERASE HEAD ON Ⓗ
FLY ON [H]	FLYING ERASE HEAD ON Ⓗ
FLY. E [H]	FLYING ERASE HEAD ON Ⓗ
FM MUT [H]	FM AUDIO MUTE Ⓗ
FM MUTE [H]	FM AUDIO MUTE Ⓗ
FM OUT [L]	FM OUTPUT (L)
FM OUT [R]	FM OUTPUT (R)
FM PACK OUT [L]	FM PACK OUTPUT (L)
FM PACK OUT [R]	FM PACK OUTPUT (R)
FM/BS SEL [L]	FM/BS SELECT (L)
FM/BS SEL [R]	FM/BS SELECT (R)
FS. CLK	FS CLOCK
FUL. E [H]	FULL ERASE HEAD ON Ⓗ
FULL. E [H]	FULL ERASE HEAD ON Ⓗ
FULL. E. 12V	FULL ERASE 12V
GND [A]	GND (ANALOG)
GND [TU]	GND (TUNER)
GND/N. SW. 12V	GND/NON SW 12V
H. SYNC	HORIZONTAL SYNC
H. AMP. SW	HEAD AMP SW PULSE
H. P <R>	HEAD PHONE (R)
H. P <L>	HEAD PHONE (L)
H. P GND	HEAD PHONE GND
H. P OUT [L]	HEAD PHONE OUTPUT (L)
H. P OUT [R]	HEAD PHONE OUTPUT (R)
H. SW	HEAD SW PULSE
HEAD PHONE [L]	HEAD PHONE (L)
HEAD PHONE [R]	HEAD PHONE (R)
HEAD SW	HEAD SW
HEATER [+]	HEATER (+)
HEATER [–]	HEATER (–)
HSS	HORIZONTAL SYNC SIGNAL
HTR [+]	HEATER (+)
HTR [–]	HEATER (–)
I RFE	REFERENCE CURRENT
ICL	CONTROL AGC CIRCUIT
IF	INTERMEDIATE FREQUENCY
IN SELA1	INPUT SELECT A1 POSITION
IN SELA2	INPUT SELECT A2 POSITION
IN SELA3	INPUT SELECT A3 POSITION
INS L/R [L]	INSERT Lch/Rch Ⓛ
INS. [H]	INSERT Ⓗ
INSEL A1	INPUT SELECT A1 POSITION
INSEL A2	INPUT SELECT A2 POSITION
INSERT	INSERT
INSERT [H]	INSERT Ⓗ
IO CS	INPUT/OUTPUT CHIP SELECT
JOG1	JOG1
JOG S3 LED/FOWRD	JOG LED/FORWARD LED
JOG/F. LED	JOG LED/FORWARD LED
JSB [H]	JSB Ⓗ
JST. CLCK	JUST CLOCK
JST. CLK	JUST CLOCK
JST. CLOCK	JUST CLOCK
L. OUT	Lch OUTPUT
L. CH [H]	Lch Ⓗ
L. CH [L]	Lch Ⓛ
LED (MAIN)	LED (MAIN)
LED (STEREO)	LED (STEREO)
LED (SUB)	LED (SUB)
LED CKL	LED SERIAL CLOCK
LED CKS	LED SERIAL CLOCK
LED DATA	LED SERIAL DATA
LINE IN 1 [L]	LINE INPUT 1 (L)
LINE IN 1 [R]	LINE INPUT 1 (R)
LINE IN 2 [L]	LINE INPUT 2 (L)
LINE IN 2 [R]	LINE INPUT 2 (R)
LINE IN V	LINE INPUT VIDEO
LINE IN [L]	LINE INPUT (L)

LINE IN [R]	LINE INPUT (R)	P-OFF [H]	POWER OFF Ⓗ
LINE OUT [L]	LINE OUTPUT (L)	P-OFF [L]	POWER OFF Ⓛ
LINE OUT [R]	LINE OUTPUT (R)	P. FAIL	POWER FAILURE DETECT
LP [H]	LP Ⓗ	P. OFF [H]	POWER OFF Ⓗ
LPTRI [L]	LP TRICK PLAY Ⓛ	P. OFF [L]	POWER OFF Ⓛ
Lch/A. DUB	Lch/AUDIO DUBBING	PAL [H]	PAL Ⓗ
M GND	MOTOR GND	PAL [L]/NTSC [H]	PAL Ⓛ/NTSC Ⓗ
M REG	MOTOR REGULATOR	PB ADJ OUT	PLAYBACK ADJUST OUTPUT
MAIN OUT	MAIN OUTPUT	PB OUT	PLAYBACK OUTPUT
MAIN [L]	MAIN Ⓛ	PB. H	PLAYBACK Ⓗ
MAIN/MONO	MAIN/MONAURAL	PFG	PG/FG
MAX IN	MAXIMAM INPUT	PHOTSN +B	PHOTO SENSOR +B
MES [H]	MESECAM Ⓗ	PICT. CNT	PICTURE CONTROL
MESE [H]	MESECAM Ⓗ	PLAY LED/RVS LED	PLAY LED/REVERSE LED
MESE [L]	MESECAM Ⓛ	PLAY. PO	PLAY POSITION
METER 5V	LEVEL METER 5V	PLAY/R. LED	PLAY LED/REVERSE LED
METER [L]	LEVEL METER (L)	PLY/DEW	PLAY/DEW Ⓗ
METER [R]	LEVEL METER (R)	POWER OFF [L]	POWER OFF Ⓛ
METER. L/AVS	LEVEL METER (L)	PREROLL [H]	PREROLL Ⓗ
METER. R/AVC	LEVEL METER (R)	PWRFAIL	POWER FAILURE DETECT
MI/BI [L]	MIX Ⓗ/BILIGUAL	R. CH [H]	Rch Ⓗ
MIC GND	MIC GND	R. CH [L]	Rch Ⓛ
MIC IN	MIC INPUT	R. ST	RESET
MIC IN [L]	MIC INPUT (L)	R/S/F	REVERSE Ⓗ/STOP Ⓜ/FORWARD Ⓛ
MIC IN [R]	MIC INPUT (R)	RCH [H]	Rch Ⓗ
MIC [H]	MIC Ⓗ	REC 12V	RECORDING 12V
MIX [H]	MIX Ⓗ	REC CHROMA	RECORDING CHROMINANCE SIGNAL
MIX [H]/CINEMA [L]	MIX Ⓗ/CINEMA SOUND Ⓛ	REC H	RECORDING Ⓗ
MIX/CINE	MIX Ⓗ/CINEMA SOUND Ⓛ	REC IN	RECORDING INPUT
MIX/CINEMA [L]	MIX Ⓗ/CINEMA SOUND Ⓛ	REC OUT [L]	RECORDING OUTPUT Ⓛ
MN. H/M. L	MONAURAL Ⓗ/MAIN Ⓛ	REC START	RECORDING START
MN. H/MAI. L	MONAURAL Ⓗ/MAIN Ⓛ	REC VR [C]	RECORDING VOLUME (COMMON)
MN2/MES. L	MONAURAL 2/MESECAM Ⓛ	REC VR [L]	RECORDING VOLUME (L)
MODE SEL	AUDIO MODE SELECT	REC VR [R]	RECORDING VOLUME (R)
MODE SW	AUDIO MODE SW	REC Y	RECORDING LUMINANCE SIGNAL
MODE. S. IN	AUDIO MODE SELECT INPUT	REC [H]	RECORDING Ⓗ
MODE. S. OUT	AUDIO MODE SELECT OUTPUT	REC. C	RECORDING CHROMINANCE SIGNAL
MONO [H]	MONAURAL Ⓗ	REC. Y	RECORDING LUMINANCE SIGNAL
MONO [H]/MAIN [L]	MONAURAL Ⓗ/MAIN Ⓛ	REC/EE CTL	RECORDING/EE CONTROL
MONO2 [L]	MONAURAL 2	REEL-T	REEL PULSE (TAKE-UP)
MONO2/MESE [FM(L)]	MONAURAL 2/MESECAM (FM Ⓛ)	REEL-S	REEL PULSE (SUPPLY)
MOTOR GND	MOTOR GND	REGULATOR FILTER	REGULATOR FILTER
MUTE	MUTE	RESET	RESET
N. A. REC [L]	NORMAL AUDIO RECORDING	REV M F/R	REVIEW MOTOR
N. SW 12V	NON SW 12V		FORWARD/REVERSE
N. SW. 5. DET	NON SW 5V DETECT	REV M V1	REVIEW MOTOR V1
NICAM	NICAM	REV M V2	REVIEW MOTOR V2
NICAM [L]	NICAM Ⓛ	REV MOTOR F/R	REVIEW MOTOR
NOL [H]	PAL Ⓗ/4.43 NTSC Ⓜ/3.58 NTSC Ⓛ		FORWARD/REVERSE
NOR/SOFT [H]	NORMAL/SOFT TAPE PLAY Ⓗ	REV MOTOR V1	REVIEW MOTOR V1
NORMAL [H]	NORMAL Ⓗ	REV MOTOR V2	REVIEW MOTOR V2
NR BIAS	NR BIAS	REV MOTOR [+]	REVIEW MOTOR (+)
NTSC [L]	NTSC Ⓛ	REV MOTOR [–]	REVIEW MOTOR (+)
OCH	CONTROL AGC CIRCUIT	REV. M. GND	REVIEW MOTOR GND
OUT	OUTPUT	RF. CHROMA	RF CHROMINANCE SIGNAL

RF OUT	RF OUTPUT
RF Y	RF LUMINANCE SIGNAL
RF. Y. IN	RF LUMINANCE SIGNAL INPUT
RF. Y. OUT	RF LUMINANCE SIGNAL OUTPUT
ROTAR. SW	ROTARY SW
ROTARY	ROTARY SW
RST	RESET
RST [L]	RESET Ⓛ
Rch/INST	Rch/INSERT
S IN	SERIAL DATA INPUT
S OUT	SERIAL DATA OUTPUT
S-PHOTO	SUPPLY PHOTO TRANSISTOR
S-RL. PLS	SUPPLY REEL PULSE
S. CLK	SERIAL CLOCK
S. CLK/AV	SERIAL CLOCK/AV
S. DATA	SERIAL DATA
S. DATA/A	SERIAL DATA
S. PHOTO	SUPPLY PHOTO TRANSISTOR
S. TAB [L]	SAFETY TAB SW ON Ⓛ
S/P/N	SECAM/PAL/NTSC
SC IN	SERIAL CLOCK INPUT
SC OUT	SERIAL CLOCK OUTPUT
SCK SELECT	SERIAL CLOCK SELECT
SEL OUT [L]	SELECT OUTPUT (L)
SEL OUT [R]	SELECT OUTPUT (R)
SHUTTLE 1	SHUTTLE 1
SIF	SOUND INTERMEDIATE FREQUENCY
SLMUT [H]	INPUT SELECT MUTE Ⓗ
SLNID [+]	SOLENOID (+)
SLNID [–]	SOLENOID (–)
SLW TR. MM	SLOW TRACKING MONO MULTI
SLW TR. REF	SLOW TRACKING REFERENCE VOLTAGE
SNS. GND	SENSOR GND
SOFT [H]	SOFT TAPE PLAY Ⓗ
SOFT [H]/NORMAL	SOFT TAPE PLAY Ⓗ/NORMAL Ⓗ
SOLENOID ON [L]	SOLENOID ON Ⓛ
SP [H]	SP Ⓗ
SP/L/SLP	SP/LP
SSS [L]	SLOW/STILL/STOP
STEREO LED	STEREO LED
STEREO [H]	STEREO Ⓗ
STEREO [L]	STEREO Ⓛ
STOP. PO	STOP POSITION
STOP/5V	STOP POSITION/5V
STOP1/TAPE SEL	STOP1 POSITION/TAPE SELECT
STOP1/PAL:ST	STOP1 POSITION/PAL
STOP2. PO	STOP 2 POSITION
STOP2/S-TAB	STOP 2 POSITION/SAFETY TAB SW
STREO [H]	STEREO Ⓗ
SUB BIAS	SUB BIAS
SUB. SW	SUB SW
SVHS CAS [L]	S-VHS CASSETTE Ⓛ
SW. 5. DET	SW 5V DETECT
SYNC [L]	SYNC Ⓛ
SYSCON 5V	SYSTEM CONTROL 5V
SYSTEM	SYSTEM SW
T-PHOTO	TAKE-UP PHOTO TRANSISTOR
T-RL. PLS	TAKE-UP REEL PULSE
T. BUSCLK	TIMER BUS CLOCK
T. BUSLSN	TIMER BUS LISTEN
T. BUSTLK	TIMER BUS TALK
T. END [L]	TAPE END Ⓛ
T. PHOTO	TAKE-UP PHOTO TRANSISTOR
TAPE END [L]	TAPE END Ⓛ
TAPE END [L]/CAM	TAPE END Ⓛ/CAMERA PAUSE
TEST	TEST MODE
TPZ	TRAPEZOIDAL WAVE CIRCUIT
TRIC [L]	TRIC PLAY Ⓛ
TRICK [L]	TRIC PLAY Ⓛ
TRK. ENV	AUTO TRACKING ENVELOPE DETECT
TU. AUDIO	TUNER AUDIO
TU. GND	TUNER GND
TU. V. IN	TUNER VIDEO SIGNAL INPUT
TU. VIDEO	TUNER VIDEO
TUN NOR IN	TUNER NORMAL INPUT
TUN R	TUNER AUDIO (R)
TUN. AUDIO IN	TUNER AUDIO INPUT
TUNER 12V	TUNER 12V
TUNER L	TUNER AUDIO (L)
TUNER V IN	TUNER VIDEO SIGNAL INPUT
TUNER [L]	TUNER AUDIO (L)
TUNER [N]	TUNER AUDIO (NORMAL)
TUNER [R]	TUNER AUDIO (R)
TUNER. 12	TUNER 12V
TUOFF [H]	TUNER OFF Ⓗ
TV. AUDIO	TV AUDIO
TV/VTR	TV/VTR
TXTON [L]	TEXT ON Ⓛ
U. REG45V	UNREGULATOR 45V
UNREG	UNREGULATOR
UNREG19V	UNREGULATOR 19V
V. REF	REFERENCE VOLTAGE
V. EE [H]	VIDEO EE Ⓗ
V. EE [L]	VIDEO EE Ⓛ
VCO REF	REFERENCE OSCILLATER
VD. IN	VIDEO SIGNAL INPUT
VD. OUT	VIDEO SIGNAL OUTPUT
VIDEO EE [L]	VIDEO EE Ⓛ
VIDEO IN	VIDEO SIGNAL INPUT
VIDEO OUT	VIDEO SIGNAL OUTPUT
VM	MOTOR VOLTAGE
VM DOWN [L]	MOTOR VOLTAGE DOWN Ⓛ
VSS	VERTICAL SYNC SIGNAL
VTR [H]	VTR Ⓗ
VTR. 12V	VTR 12V
X IN	OSCILLATOR INPUT
X OUT	OSCILLATOR OUTPUT

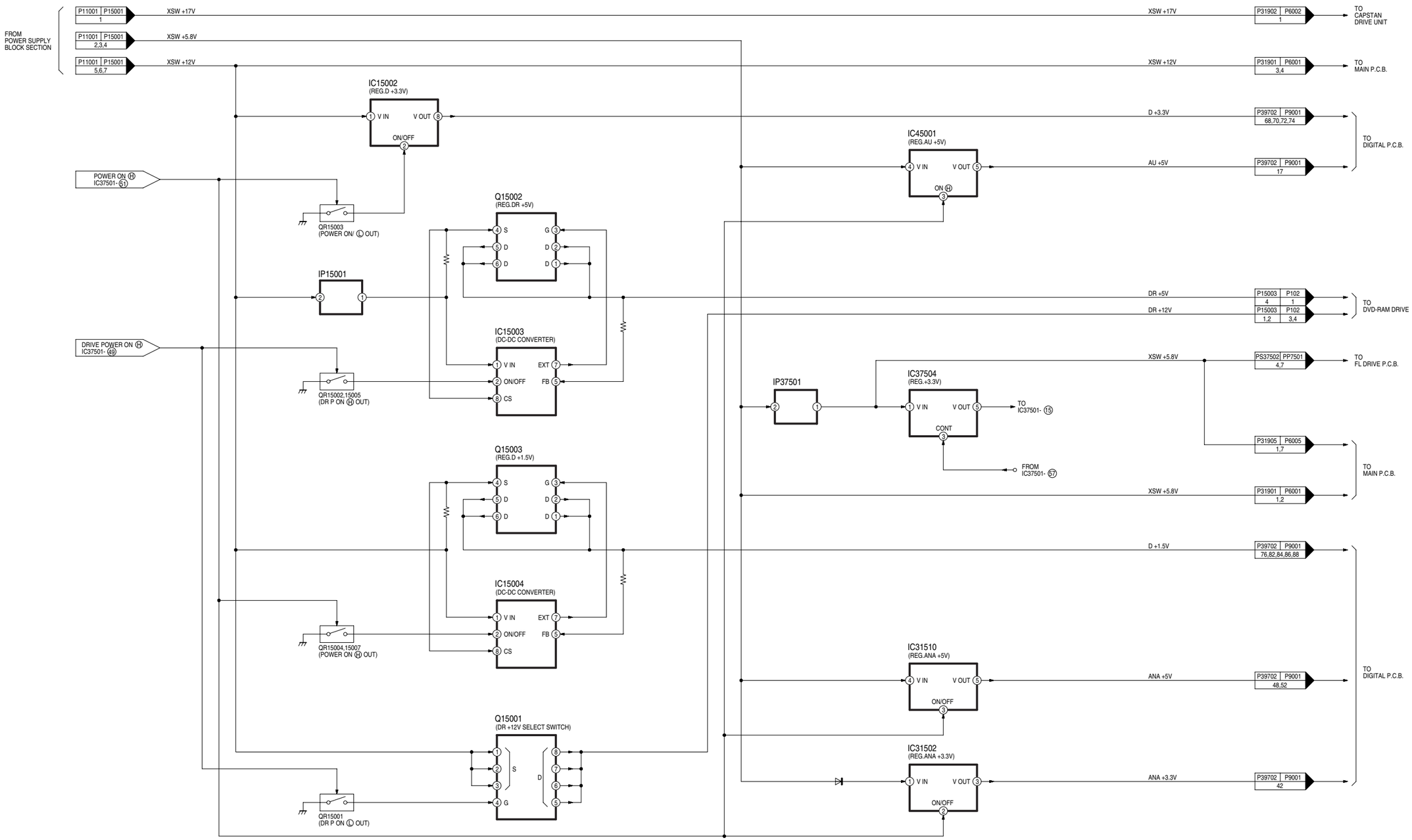
23 Block Diagram

23.1. Power Supply Block Diagram



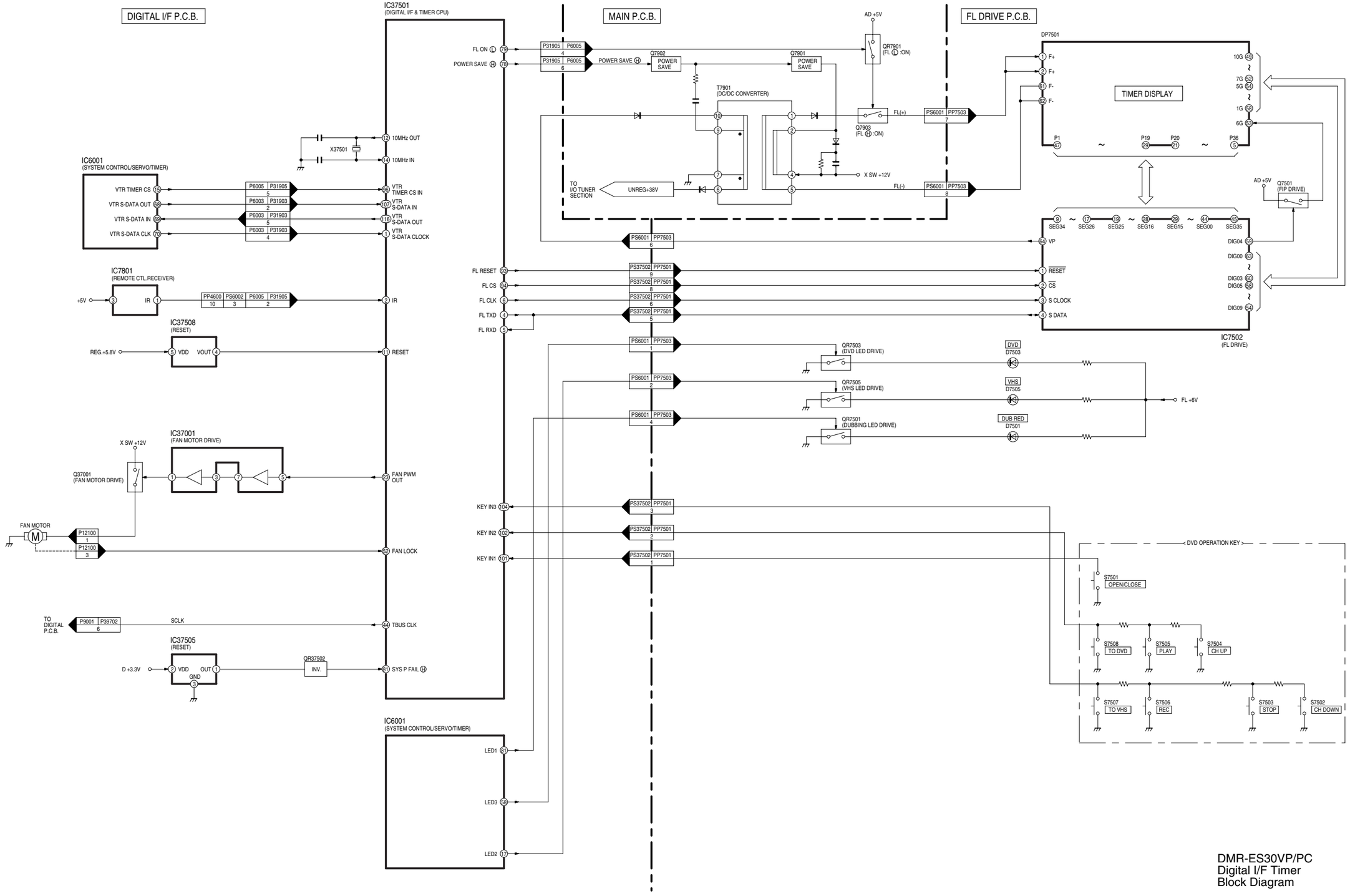
DMR-ES30VP/PC
Power Supply Block Diagram

23.2. Digital I/F Regulator Block Diagram



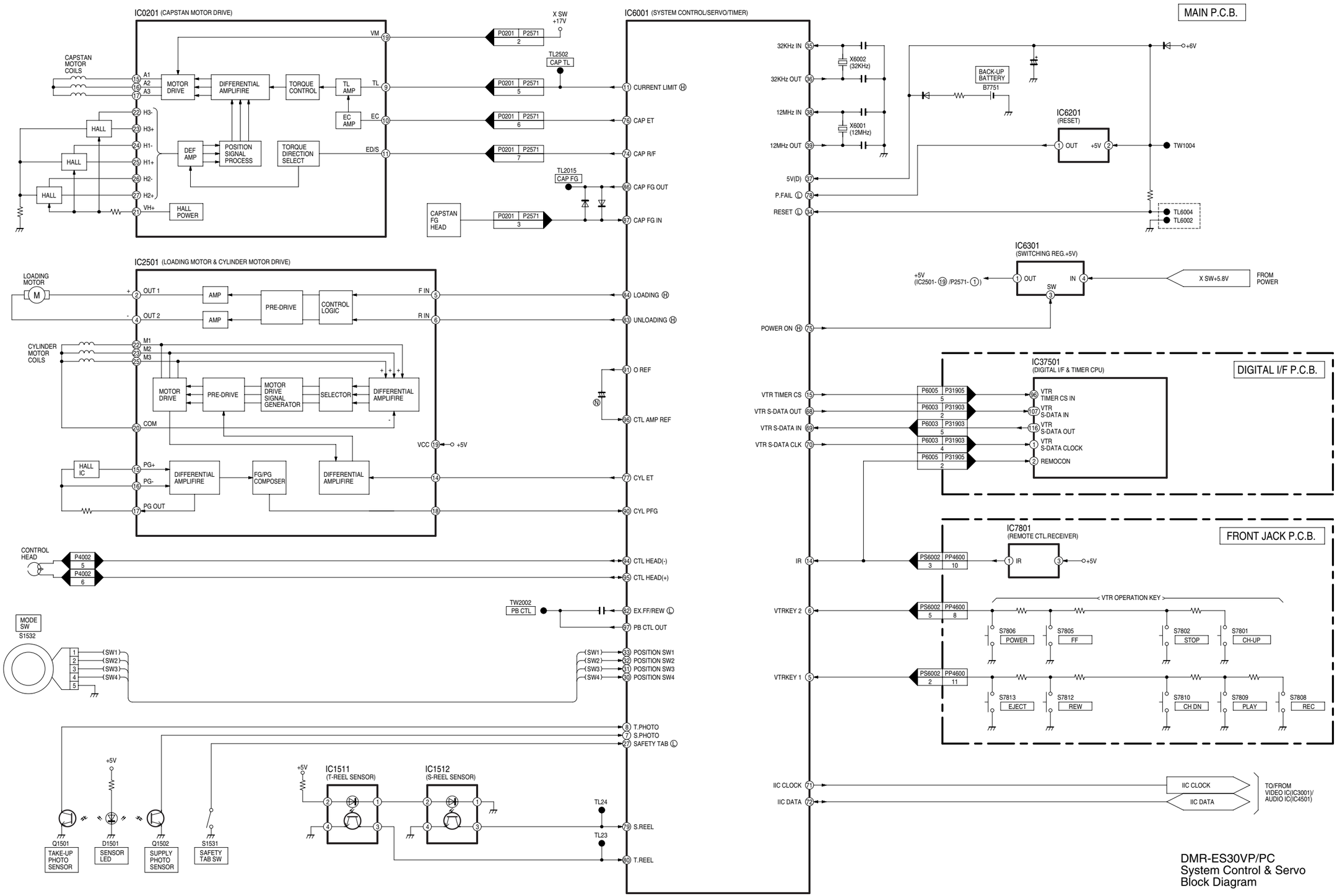
DMR-ES30VP/PC
Digital I/F Regulator
Block Diagram

23.3. Digital I/F Timer Block Diagram



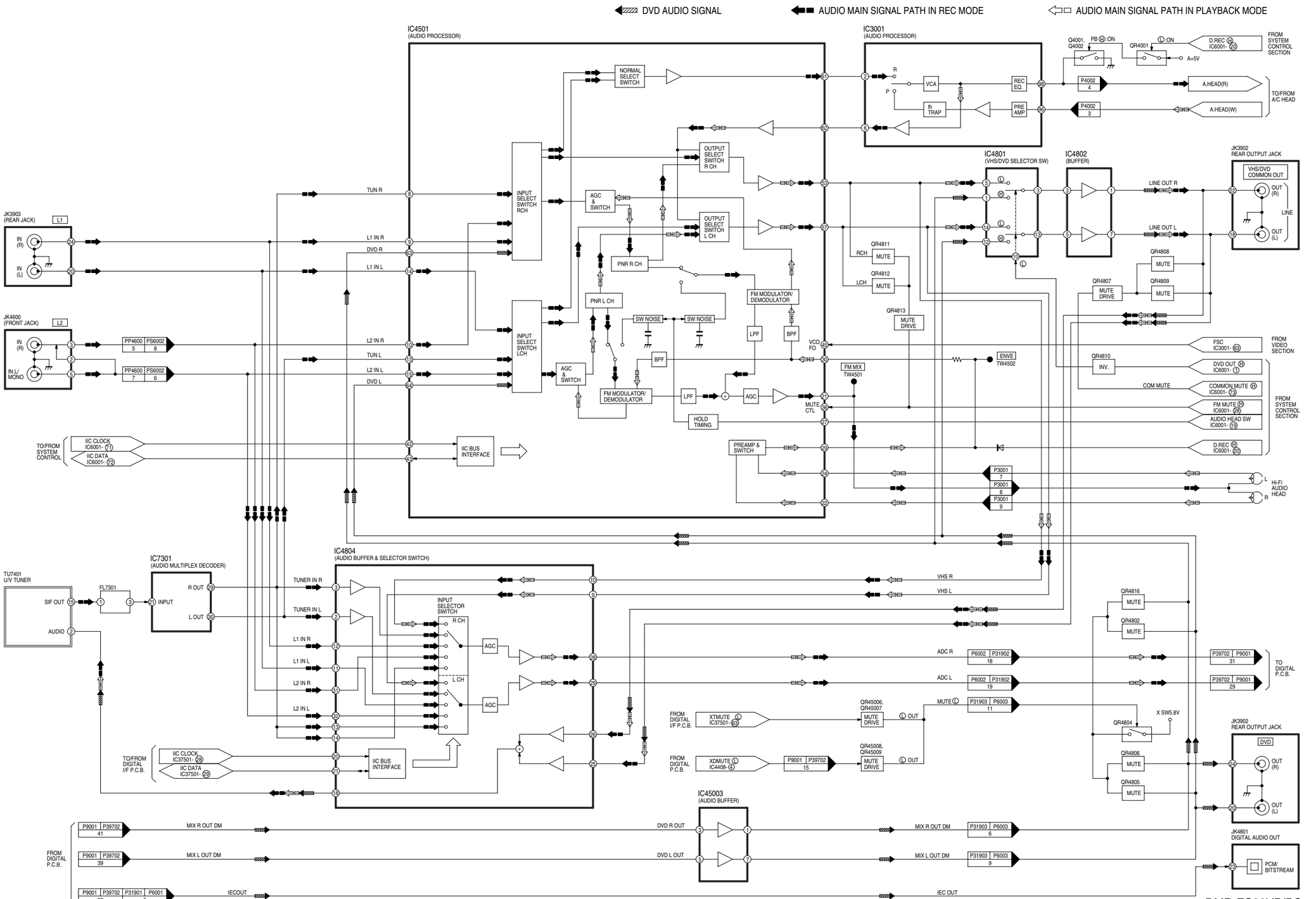
DMR-ES30VP/PC
Digital I/F Timer
Block Diagram

23.4. System Control & Servo Block Diagram



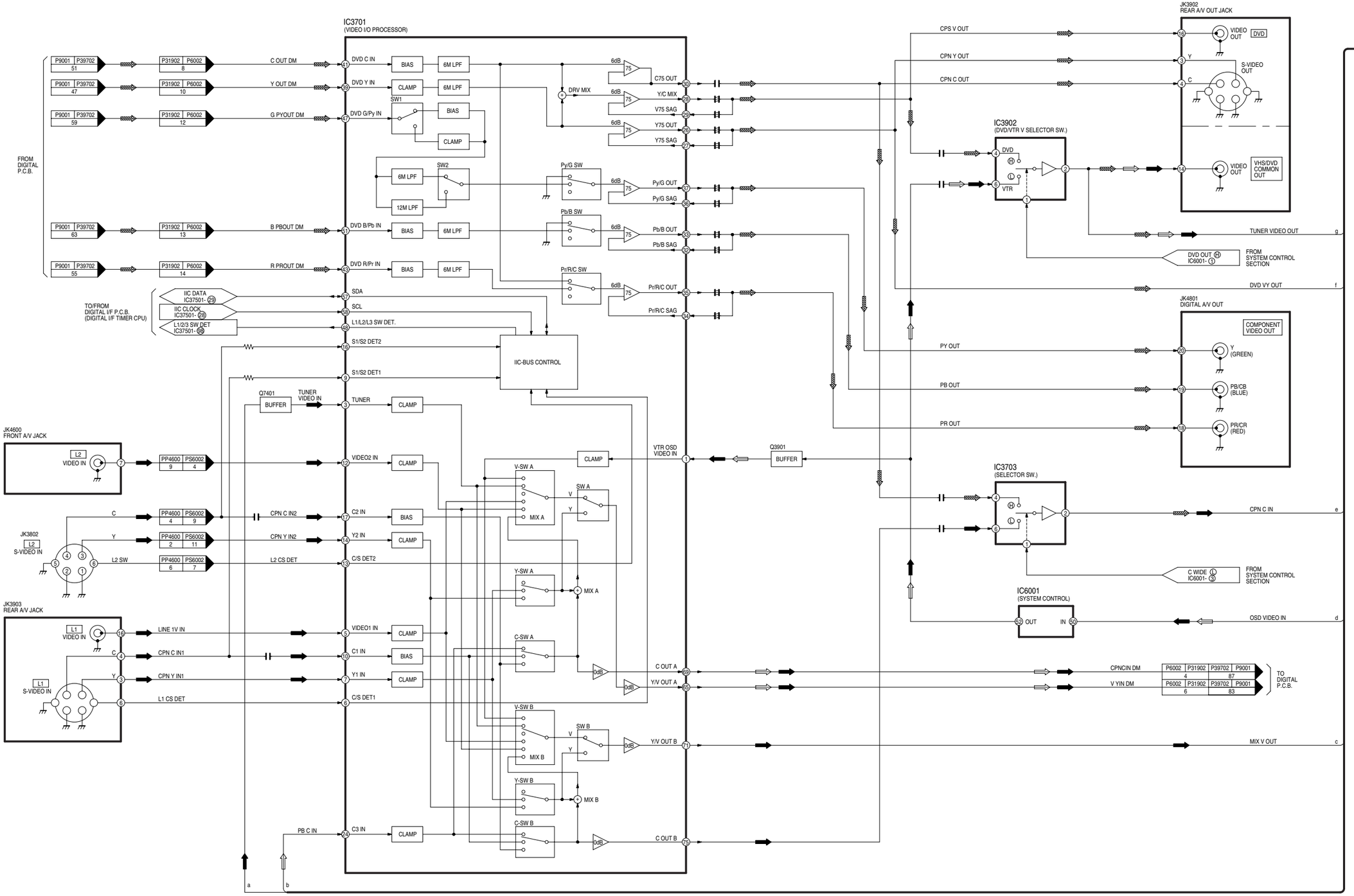
DMR-ES30VP/PC
System Control & Servo
Block Diagram

23.5. Audio Block Diagram



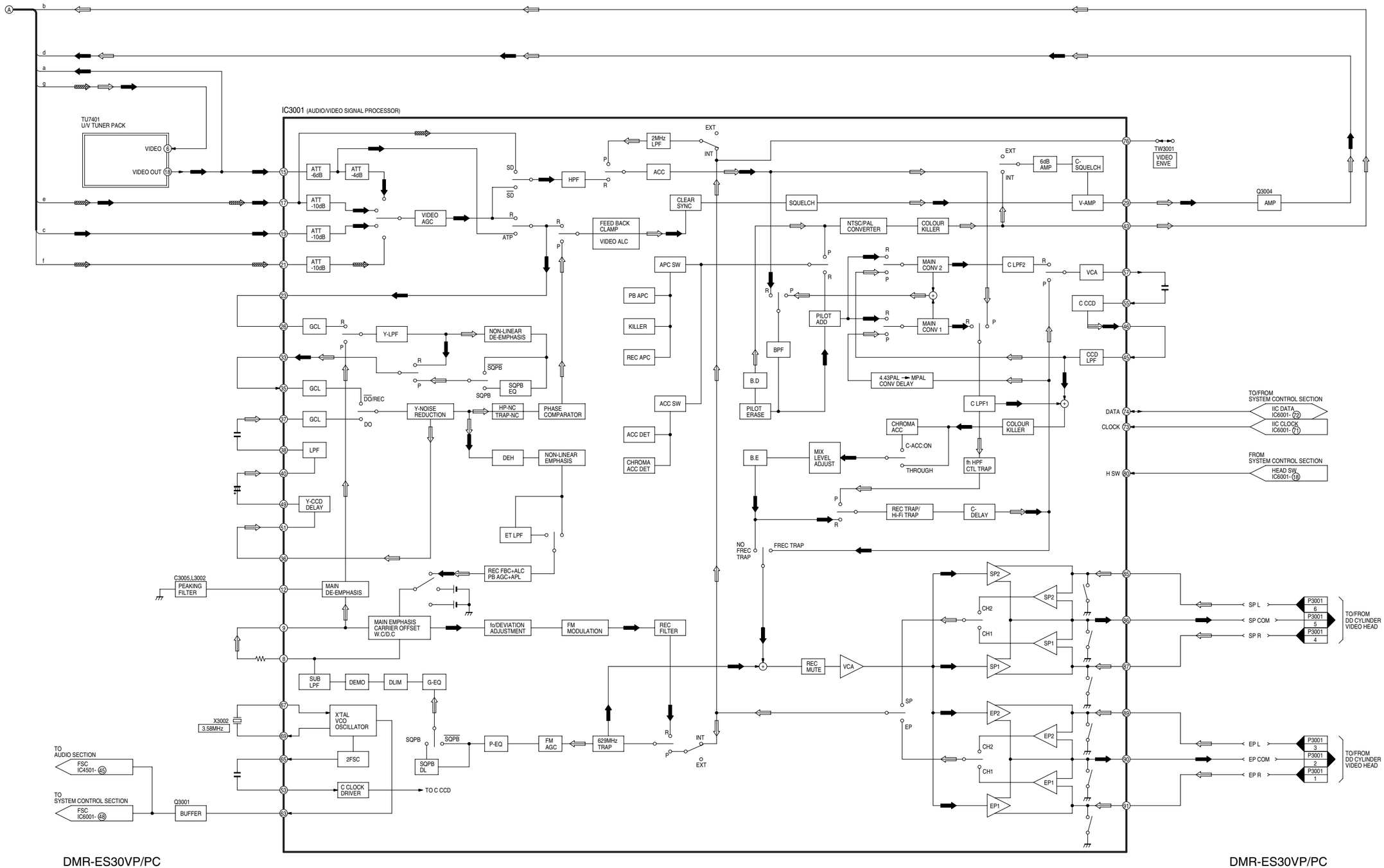
DMR-ES30VP/PC
Audio Block Diagram

23.6. Video Block Diagram



DMR-ES30VP/PC
Video Block Diagram

:DVD VIDEO EE SIGNAL :REC SIGNAL :PB SIGNAL

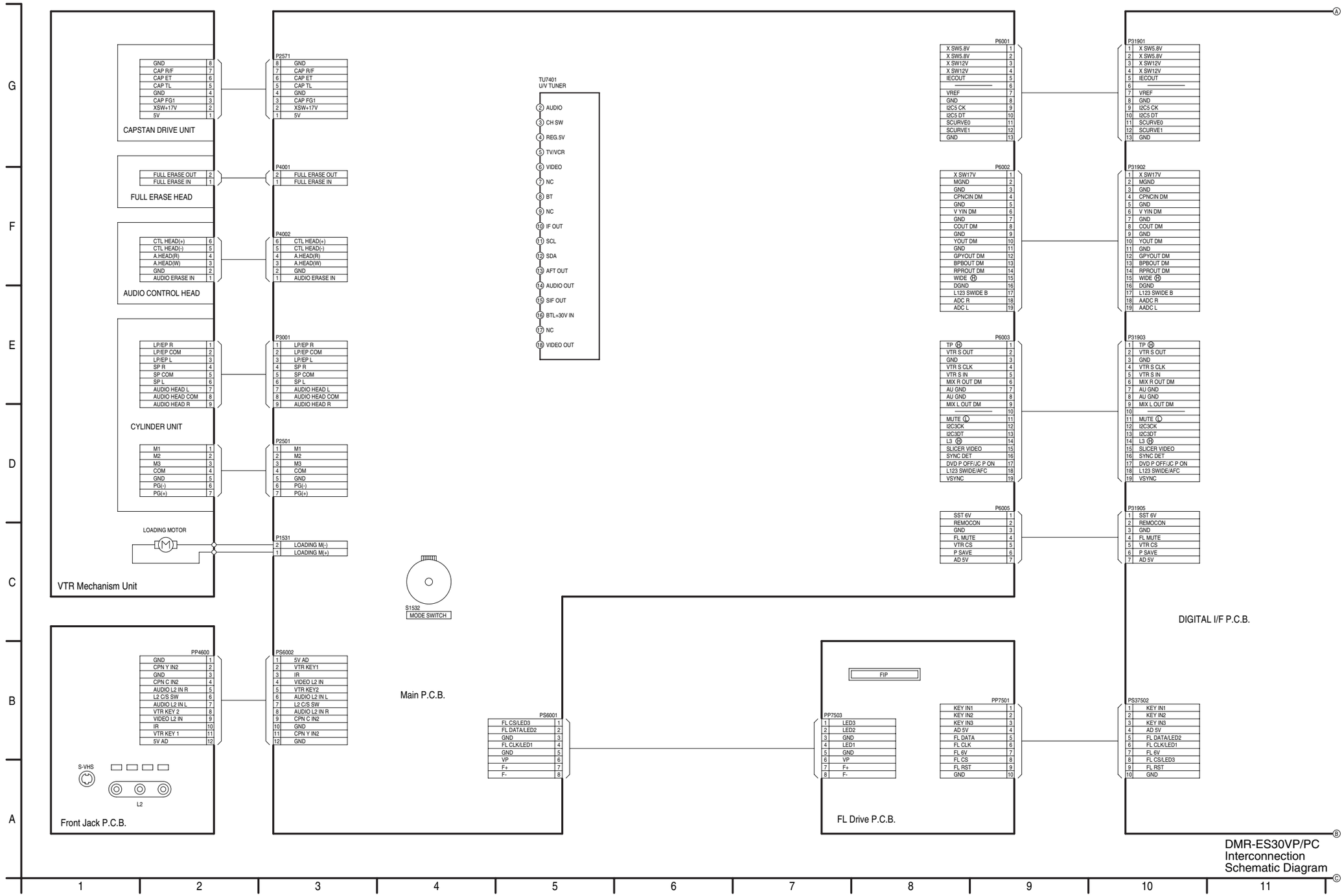


DMR-ES30VP/PC
Video Block Diagram

DMR-ES30VP/PC
Video Block Diagram

24 Schematic Diagram

24.1. Interconnection Schematic Diagram



Digital I/F P.C.B.

P39702

I2CSDT	1
I2CSCK	2
SCURVE0	3
XINTP	4
SCURVE1	5
SCLK	6
UARTM2P	7
XINTM	8
UARTP2M	9
SBPTM	10
———	11
SBMTP	12
———	13
XMPREQ	14
XDMUTE Ⓛ	15
———	16
AU5V	17
———	18
———	19
———	20
———	21
———	22
———	23
———	24
AUGND	25
———	26
AUGND	27
———	28
AADC L	29
POWER OFF Ⓛ	30
AADC R	31
———	32
AUGND	33
DGND	34
AUGND	35
IECOUT	36
AUGND	37
———	38
MIXLOUT DM	39
———	40
MIXROUT DM	41
ANA3.3V A	42
DGND	43
DGND	44
DGND	45
DGND	46
YOUT DM	47
ANA5V	48
DGND	49
———	50
COUT DM	51
ANA5V	52
DGND	53
———	54
RPROUT DM	55
NET 4.4V	56
DGND	57
NET 4.4V	58
GPYOUT DM	59
———	60
DGND	61
———	62
BPBOUT DM	63
———	64
DGND	65
PRGSEL	66
———	67
D3.3V	68
DGND	69
D3.3V	70
———	71
D3.3V	72
DGND	73
D3.3V	74
———	75
D1.5V	76
DGND	77
———	78
———	79
D1.5V B	80
DGND	81
D1.5V	82
V YIN DM	83
D1.5V	84
DGND	85
D1.5V	86
CPNCIN DM	87
D1.5V	88

P9001

1	I2CSDT
2	I2CSCK
3	SCURVE0
4	XINTP
5	SCURVE1
6	SCLK
7	UARTM2P
8	XINTM
9	UARTP2M
10	SBPTM
11	———
12	SBMTP
13	———
14	XMPREQ
15	XDMUTE Ⓛ
16	———
17	AU5V
18	———
19	———
20	———
21	———
22	———
23	———
24	———
25	AUGND
26	———
27	AUGND
28	———
29	AADC L
30	POWER OFF Ⓛ
31	AADC R
32	———
33	AUGND
34	DGND
35	AUGND
36	IECOUT
37	AUGND
38	———
39	MIXLOUT DM
40	———
41	MIXROUT DM
42	ANA3.3V A
43	DGND
44	DGND
45	DGND
46	DGND
47	YOUT DM
48	ANA5V
49	DGND
50	———
51	COUT DM
52	ANA5V
53	DGND
54	———
55	RPROUT DM
56	NET 4.4V
57	DGND
58	NET 4.4V
59	GPYOUT DM
60	———
61	DGND
62	———
63	BPBOUT DM
64	———
65	DGND
66	PRGSEL
67	———
68	D3.3V
69	DGND
70	D3.3V
71	———
72	D3.3V
73	DGND
74	D3.3V
75	———
76	D1.5V
77	DGND
78	———
79	———
80	D1.5V B
81	DGND
82	D1.5V
83	V YIN DM
84	D1.5V
85	DGND
86	D1.5V
87	CPNCIN DM
88	D1.5V

Digital P.C.B.

P3002

RESET-	40
GND	39
DD7	38
DD8	37
DD6	36
DD9	35
DD5	34
DD10	33
DD4	32
DD11	31
DD3	30
DD12	29
DD2	28
DD13	27
DD1	26
DD14	25
DD0	24
DD15	23
GND	22
———	21
DMARQ	20
GND	19
DIOW-	18
GND	17
DIOR-	16
GND	15
IORDY	14
CSEL	13
DMACK-	12
GND	11
INTRQ	10
———	9
DA1	8
———	7
DA0	6
DA2	5
CS0-	4
CS1-	3
———	2
GND	1

FP601

1	RESET-
2	GND
3	DD7
4	DD8
5	DD6
6	DD9
7	DD5
8	DD10
9	DD4
10	DD11
11	DD3
12	DD12
13	DD2
14	DD13
15	DD1
16	DD14
17	DD0
18	DD15
19	GND
20	KEY
21	DMARQ
22	GND
23	DIOW-
24	GND
25	NIOR-
26	GND
27	IORDY
28	CSEL
29	DMACK-
30	GND
31	INTRQ
32	IOCS16-
33	DA1
34	PD1AG-
35	DA0
36	DA2
37	CS0-
38	CS1-
39	DASP-
40	GND

P102

1	5V
2	MGND
3	12V
4	12V

DVD RAM Drive

P15001

1	X SW17V
2	X SW5.8V
3	X SW5.8V
4	X SW5.8V
5	X SW12V
6	X SW12V
7	X SW12V
8	GND
9	GND
10	GND
11	DR GND
12	DR GND
13	———
14	———
15	———
16	———

P15003

1	DR 12V
2	DR 12V
3	DR GND
4	DR 5V

P12100

FANDCOUT1	1
GND	2
FANLOCK	3

FAN MOTOR 1

P.C.B.Name	Circuit Name	Ref.No.
Digital P.C.B.	AVENC/RTSC/AVDEC/MAIN CPU1	Ref.No.3200,3300 SERIES
	AVENC/RTSC/AVDEC/MAIN CPU2	Ref.No.6000 SERIES
	Audio Net	Ref.No.4400,9000 SERIES

P11101

P11001

1	X SW17V
2	X SW5.8V
3	X SW5.8V
4	X SW5.8V
5	X SW12V
6	X SW12V
7	X SW12V
8	GND
9	GND
10	GND
11	DRGND
12	DRGND
13	———
14	———
15	———
16	———

Power P.C.B.

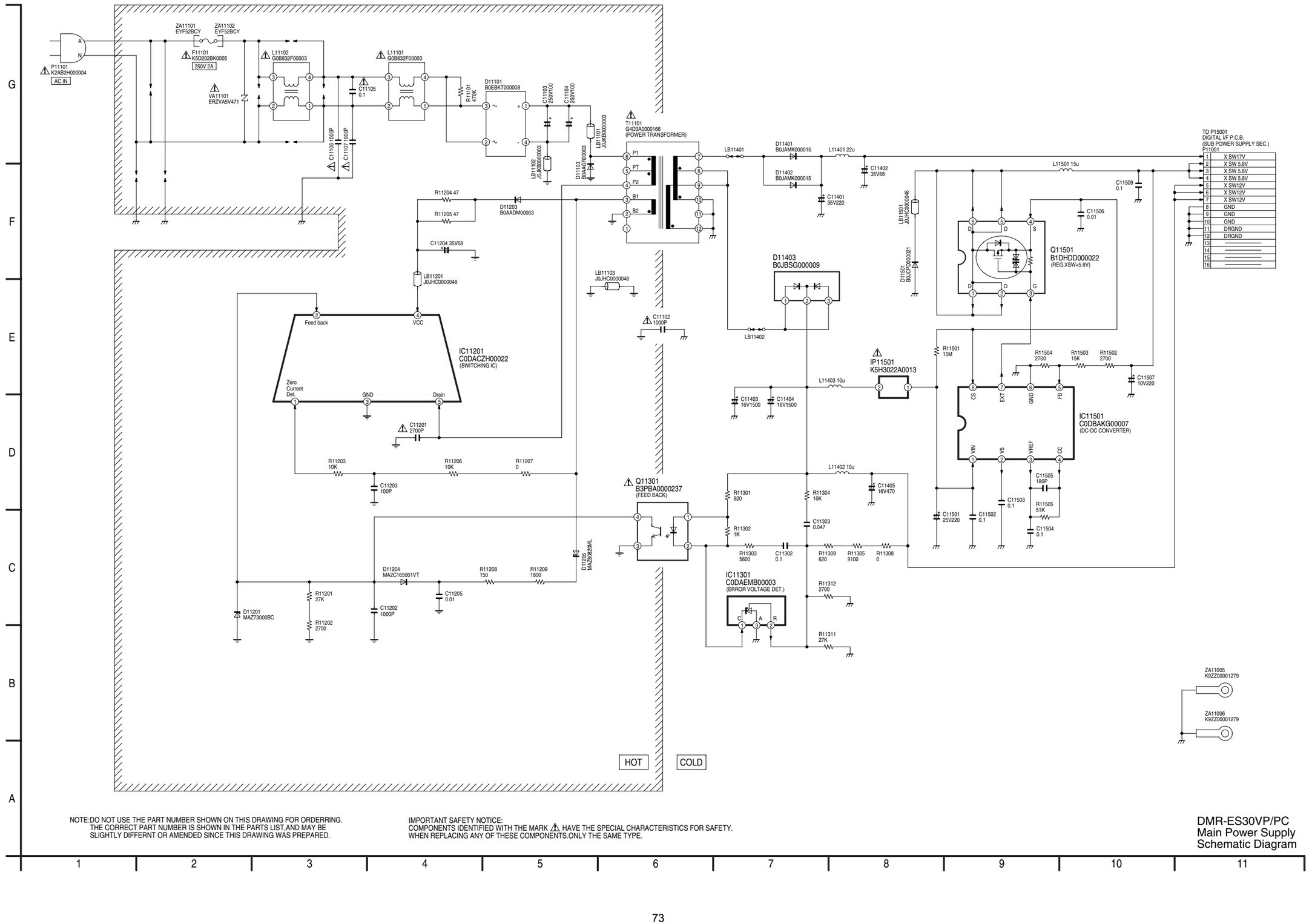
DMR-ES30VP/PC
Interconnection
Schematic Diagram

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE
SLIGHTLY DIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-ES30VP/PC
Interconnection
Schematic Diagram

12 13 14 15 16 17 18 19 20 21 22

24.2. Main Power Supply Schematic Diagram

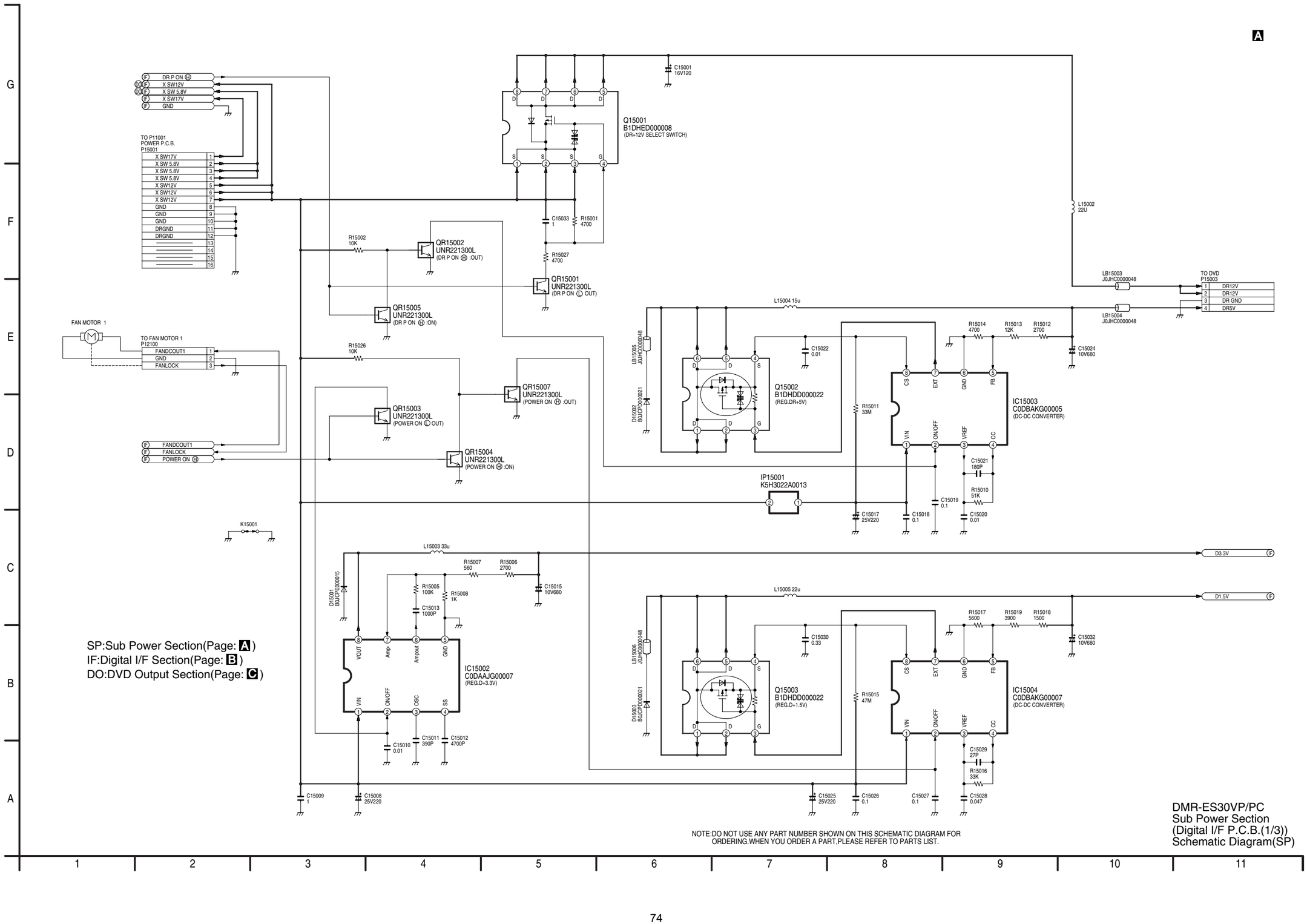


NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLY DIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

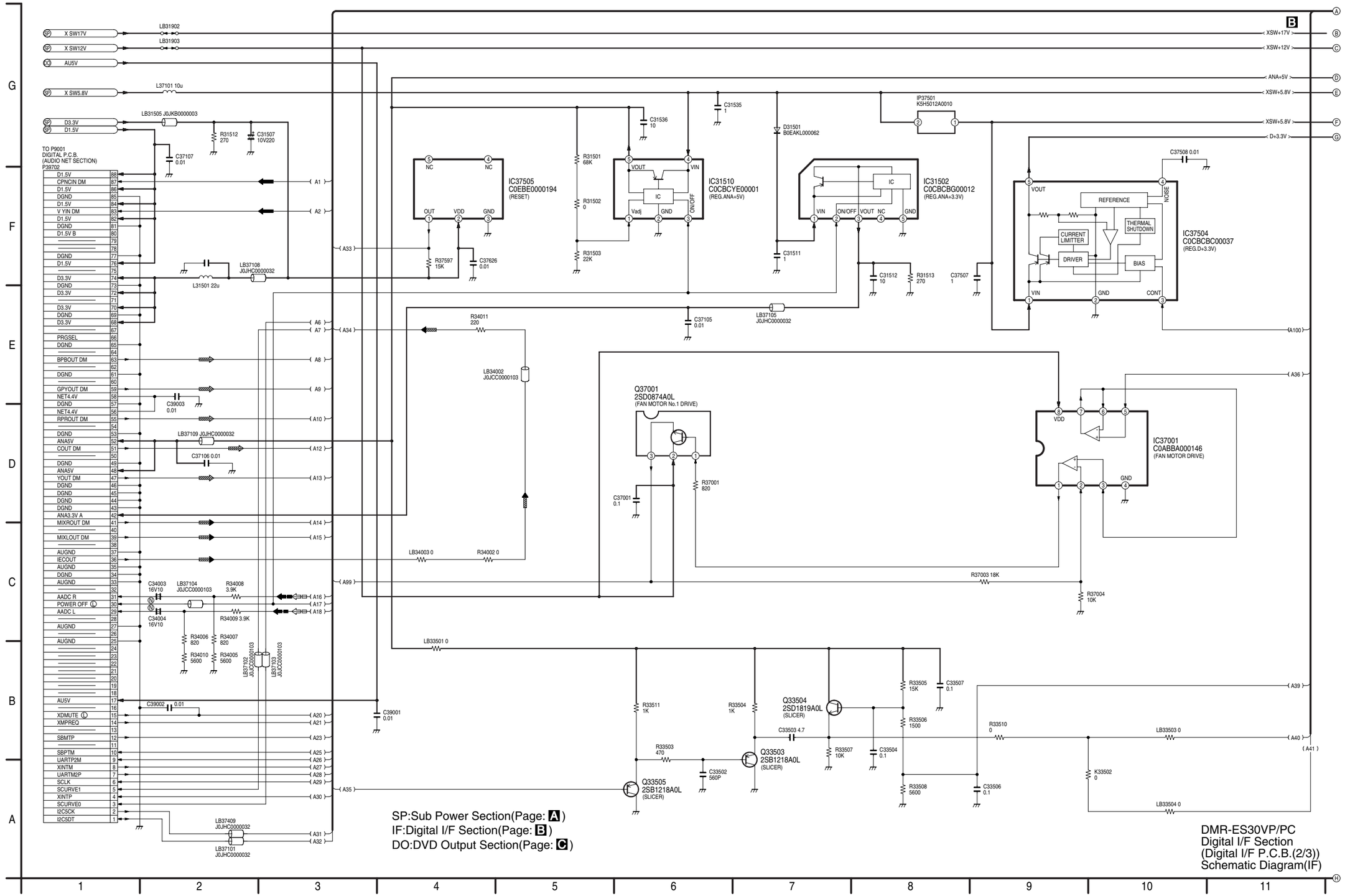
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS.ONLY THE SAME TYPE.

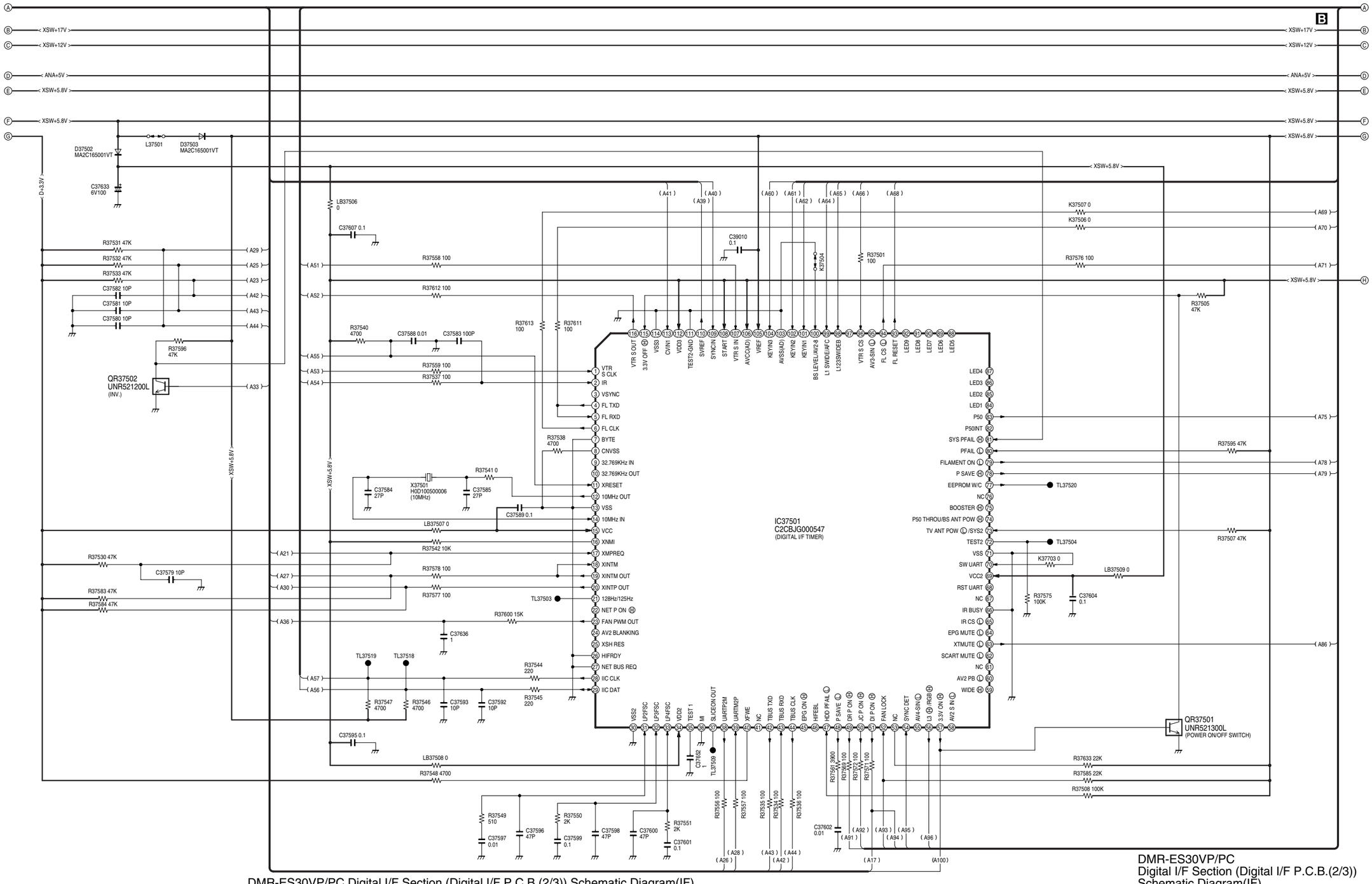
DMR-ES30VP/PC
Main Power Supply
Schematic Diagram

24.3. Sub Power Section (Digital I/F P.C.B.(1/3)) Schematic Diagram (SP)



24.4. Digital I/F Section (Digital I/F P.C.B.(2/3)) Schematic Diagram (IF)





DMR-ES30VP/PC Digital I/F Section (Digital I/F P.C.B.(2/3)) Schematic Diagram(IF)

DMR-ES30VP/PC
Digital I/F Section (Digital I/F P.C.B.(2/3))
Schematic Diagram(IF)

VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE B
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE
DVD VIDEO EE SIGNAL
DVD AUDIO EE SIGNAL

SP:Sub Power Section(Page: A)
IF:Digital I/F Section(Page: B)
DO:DVD Output Section(Page: C)

(A55)
XSW+17V
XSW+12V
ANA+5V
XSW+5.8V
XSW+5.8V
XSW+5.8V
XSW+5.8V
C37546 0.1
IC37508 C0EBH0000097 (RESET)
VDD OUT DS VS NC

TO P6001 MAIN P.C.B. (SYSCON/SERVO/TIMER SECTION) P31901

13	GND
12	SCURVE1/R
11	SCURVE0/B
10	I2C5 DT
9	I2C5 CK
8	GND
7	VREF
6	—
5	IECOUT
4	X SW12V
3	X SW12V
2	X SW5.8V
1	X SW5.8V

C31901 1000P

TO P6002 MAIN P.C.B. (SYSCON/SERVO/TIMER SECTION) P31902

19	AADC L
18	AADC R
17	L123 SWIDE B/A2 SIN
16	GND
15	WIDE H
14	RPROUT DM
13	BPBOUT DM
12	GPYOUT DM
11	GND
10	YOUT DM
9	GND
8	COUT DM
7	GND
6	V YIN DM
5	GND
4	CPNCIN DM
3	GND
2	MGND
1	X SW17V

C33735 6V47
C33740 6V47
C33738 0.01

DVD R OUT
DVD L OUT
MUTE L

TO P6003 MAIN P.C.B. (SYSCON/SERVO/TIMER SECTION) P31903

19	VSYNC
18	L123 SWIDE/AFC
17	DVD POFF/JC PON
16	SYNC DET
15	SLICER VIDEO
14	L3 H
13	I2C3DT/IIC DATA
12	I2C3CK/IIC CLK
11	MUTE L
10	—
9	MIXLOUT DM
8	AUGND
7	AUGND
6	MIXROUT DM
5	VTR S IN
4	VTR S CLK
3	GND
2	VTR S OUT
1	TP H

K37511

MIX R OUT
MIX L OUT

TO P6005 MAIN P.C.B. (SYSCON/SERVO/TIMER SECTION) P31905

7	ADSV
6	P SAVE
5	VTR CS
4	FL MUTE
3	GND
2	REMOCON
1	SST6V

A99 FANDCOUT1 SP
A93 FANLOCK SP
A91 DR P ON H SP
A94 POWER ON H DO SP
A20 XDMUTE L DO
A86 XTMUTE L DO
GND DO SP
AUGND DO

R37604 8200
R37606 8200
R37605 8200
C37610 0.01
C37603 0.01
C37609 0.01

TO PP7501 FL DRIVE P.C.B. PS37502

1	KEY IN1
2	KEY IN2
3	KEY IN3
4	AD5V
5	FL DATA/LED2
6	FL CLK/LED1
7	FL 6V
8	FL CS/LED3
9	FL RST
10	GND

R37509 100K

K31995
K31998
K31999
K37597
K37598

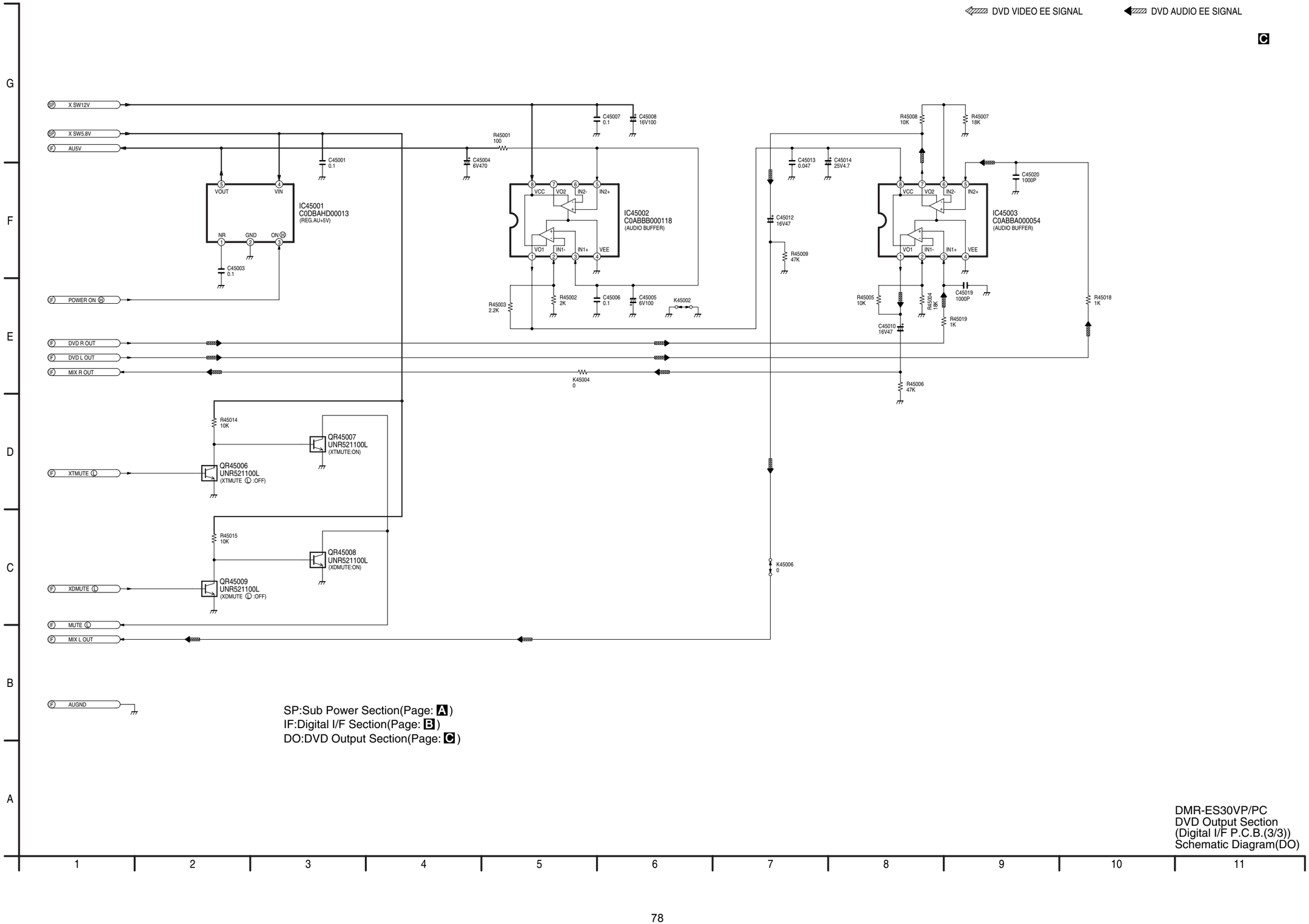
ZJ37301 K9ZZ00001279
ZJ37303 K9ZZ00001279
ZJ37305 K9ZZ00001279
ZJ37302 K9ZZ00001279
ZJ37304 K9ZZ00001279

DMR-ES30VP/PC
Digital I/F Section
(Digital I/F P.C.B.(2/3))
Schematic Diagram(IF)

DMR-ES30VP/PC
Digital I/F Section
(Digital I/F P.C.B.(2/3))
Schematic Diagram(IF)

23 24 25 26 27 28 29 30 31 32 33

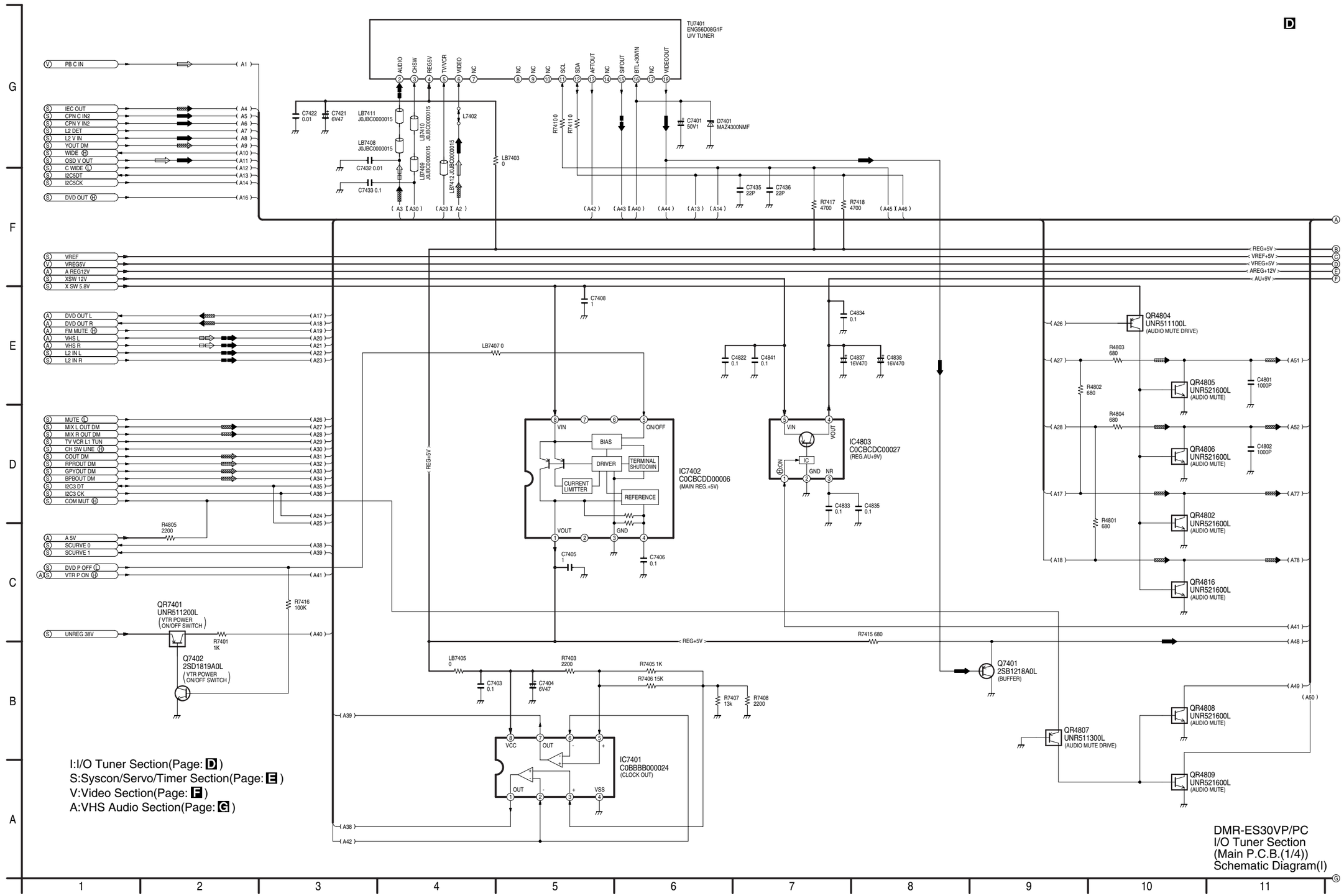
24.5. DVD Output Section (Digital I/F P.C.B.(3/3)) Schematic Diagram (DO)

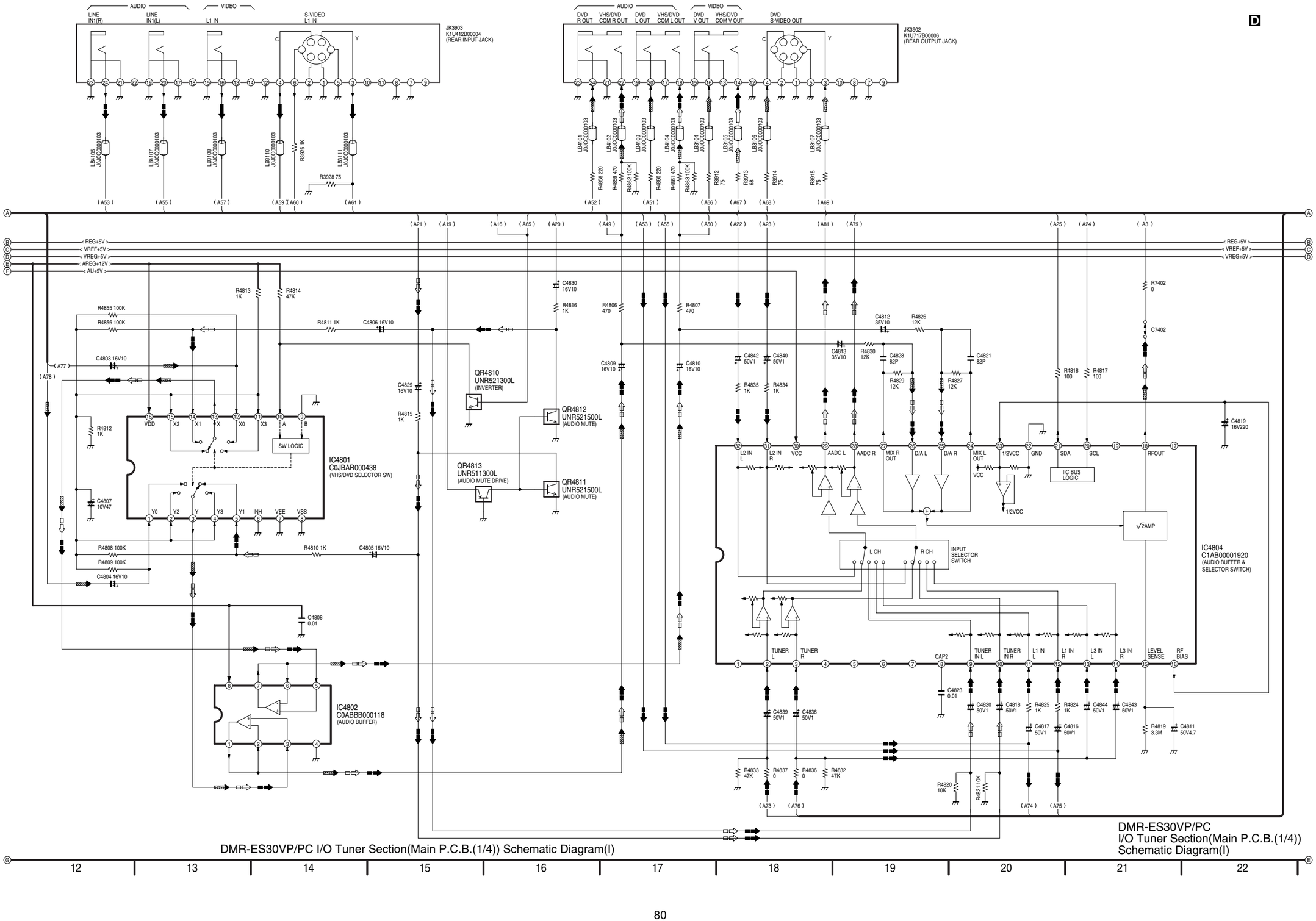


SP:Sub Power Section(Page: A)
IF:Digital I/F Section(Page: B)
DO:DVD Output Section(Page: C)

DMR-ES30VP/PC
DVD Output Section
(Digital I/F P.C.B.(3/3))
Schematic Diagram(DO)

24.6. I/O Tuner Section (Main P.C.B.(1/4)) Schematic Diagram (I)





DMR-ES30VP/PC I/O Tuner Section(Main P.C.B.(1/4)) Schematic Diagram(I)

DMR-ES30VP/PC
I/O Tuner Section(Main P.C.B.(1/4))
Schematic Diagram(I)

D

JK4801
K1U407B00004
(DIGITAL A/V OUT JACK)

COMPONENT VIDEO OUT (480P/480I)
PR/CR (RED)
PB/CB (BLUE)
Y (GREEN)
DIGITAL AUDIO OUT (PCM/BITSTREAM)
GND VCC IN

LB3101 JUJC20000103
LB3102 JUJC20000103
LB3103 JUJC20000103
L4801
C4831 0.1
C4832 6V47
R3907 75
R3908 75
R3909 75

IC3701
C1AB00001918
(VIDEO I/O PROCESSOR)

IC3902
C1AB00001935
(DVD/VTR V SELECTOR SW.)

Q3901
XN0460100L
(BUFFER)

IC3703
C1AB00001340
(SELECTOR SWITCH)

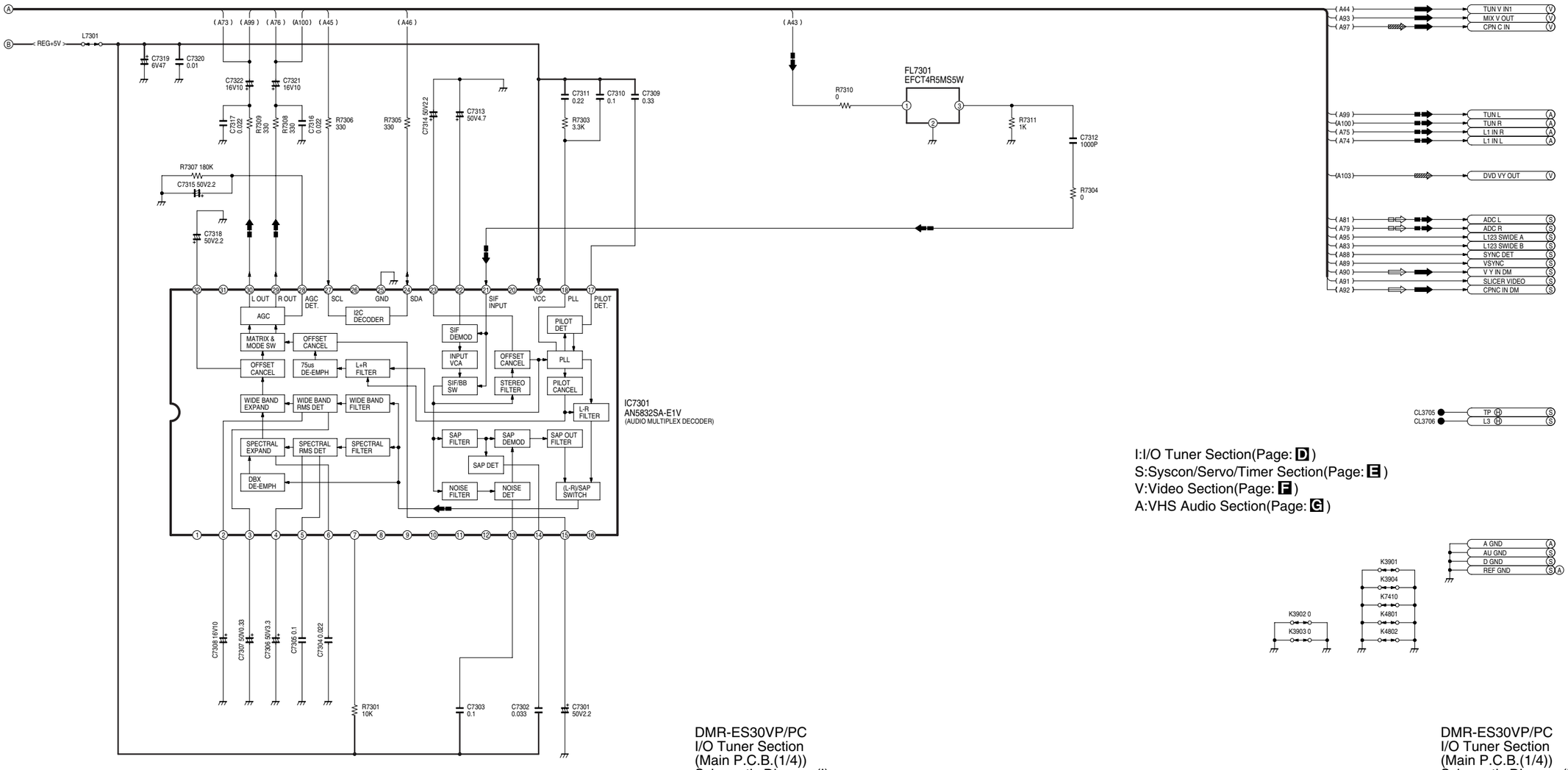
REG+5V
VREF+5V
VREG+5V

DMR-ES30VP/PC
I/O Tuner Section (Main P.C.B.(1/4)) Schematic Diagram(I)

DMR-ES30VP/PC
I/O Tuner Section (Main P.C.B.(1/4)) Schematic Diagram(I)

D

VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE
DVD VIDEO EE SIGNAL
DVD AUDIO EE SIGNAL



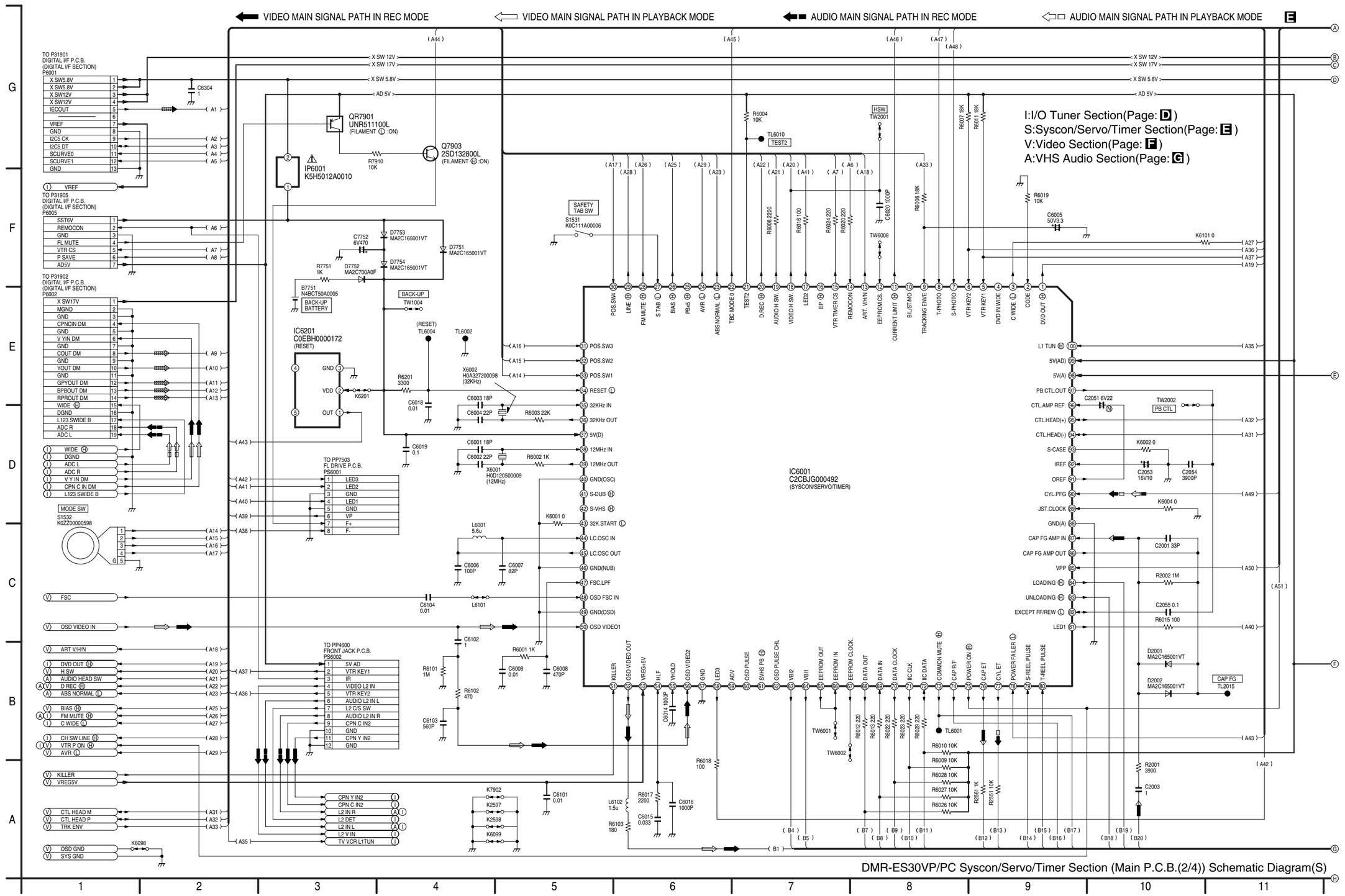
I:I/O Tuner Section(Page: D)
S:Syscon/Servo/Timer Section(Page: E)
V:Video Section(Page: F)
A:VHS Audio Section(Page: G)

DMR-ES30VP/PC
I/O Tuner Section
(Main P.C.B.(1/4))
Schematic Diagram(I)

DMR-ES30VP/PC
I/O Tuner Section
(Main P.C.B.(1/4))
Schematic Diagram(I)

34 35 36 37 38 39 40 41 42 43 44

24.7. Syscon/Servo/Timer Section (Main P.C.B.(2/4)) Schematic Diagram (S)



DVD AUDIO EE SIGNAL
DVD VIDEO EE SIGNAL
CAPSTAN SERVO SPEED LOOP
CAPSTAN SERVO PHASE LOOP
CYLINDER SERVO SPEED LOOP
CYLINDER SERVO PHASE LOOP

X SW 12V
X SW 17V
X SW 5.8V
REG.12V
REG.5V

Q6305
2SD0601A0L
(REG.+5V)
R6309 2700
C6302 0.01
D6306 MAZ4056NHF
C6303 6V47
IC6301
C0CBCDC00020
(REG.+5V)
REG
ON
Q6801
2SD1819A0L
(INV.)
QR6801
UNR511300L
(INV.)
R6801 100K
R6803 470K
R6802 0

IC1511
B3NAA0000049
(T-REEL SENSOR)
IC1512
B3NAA0000049
(S-REEL SENSOR)
R1513 120
R1512 27K
R1511 27K
TL23
TL24
Q1501
PNB2302MF
T PHOTO
Q1502
PNB2302MF
S PHOTO
SENSOR
D1501
B3EA00000072
R1501 27K
R1503 150
R1502 27K
C6012 0.1

R7906 22K
R7905 22K
Q7902
2SD1819A0L
(POWER SAVE)
D7901 MAZ4220NMF
C7902 50V10
C7901 0.1
D7903 B0JAME000025
R7901 560
T7901
ETS13TB159AP
(DC/DC CONVERTER)
C7903 0.1
R7908
LB7901
J0JKB0000028
D7904 MA2C18500E
C7910 50V56
C7908 0.01
D7906 MAZ4300NMF
D7905 MA2C18500E
L7901 100u
R7902 33K
C7906 0.047
R7903 4700
C7907 10V100
R7904 4700
C7904 0.1
C7905 16V220
D7902 B0AAGM000007
Q7901
2SD21770SA
(POWER SAVE)
R7907 100
L7902 22u
R7909 39K
C7909 50V56
C7911 0.01
TL2502
CAP TL
R2562 47K
C2571 35V220
C6308 6V47

R2516 220
R2514 220
R2515 220
C2512 0.1
C2510 0.1
C2511 0.1
C2509 16V22
R2502 1.5
R2501 1.2
R2565 100
C2501 0.1
C2502 6V220
C2508 1800P
C2518 0.01
R2520 18K
R2564 100
R2552 10K
C2552 0.056
C2551 0.056
R2521 1K
C2513 1
C2519 0.01
R2503 1800
D2502 MAZ4160NMF

IC2501
C1AB00001767
(LOADING MOTOR AND CYLINDER MOTOR DRIVE)
M3
RNF
M2
M1
VM
COM
VCC
PFG
PG OUT
PG-
PG+
EC
PG/FG COMPOSER
DIFFERENTIAL AMP
MOTOR DRIVE
PRE-DRIVE
MOTOR DRIVE SIGNAL GENERATOR
SELECTOR
DIFFERENTIAL AMP
DIFFERENTIAL AMP
RRE-DRIVE
AMP
AMP
CONTROL LOGIC
TSD
STARTING CONTROL LOGIC
SOFT SWITCH
LOWER SATURATION PREVENT CIRCUIT
VM2
OUT1
L GND
OUT2
F IN
R IN
VG
GND
CST
CT1
CT2
PCI
CNF
C2506 0.22
C2504 0.022
C2505 0.022
C2515 0.01
C2507 1000P

HALL IC
MAIN COIL3
MAIN COIL2
MAIN COIL1
CYLINDER MOTOR
LOADING M(+)
LOADING M(-)
LOADING MOTOR

TO P31903
DIGITAL I/F P.C.B.
(DIGITAL I/F SECTION)
P6003
1 TP
2 VTR S OUT
3 GND
4 VTR S CLK
5 VTR S IN
6 MIX R OUT DM
7 AU GND
8 AU GND
9 MIX L OUT DM
10 ———————
11 MUTE
12 I2C3CK
13 I2C3DT
14 L3
15 SLICER VIDEO
16 SYNC DET
17 DVD P OFF
18 L123 SWIDE
19 VSYNC

TO
CAPSTAN DRIVE UNIT
P2571
8 GND
7 CAP R/F
6 CAP ET
5 CAP TL
4 GND
3 CAP FG1
2 XSW+17V
1 5V

TO CYLINDER UNIT
P2501
1 M1
2 M2
3 M3
4 COM
5 GND
6 PG(-)
7 PG(+)

TO
LOADING MOTOR
P1531
2 LOADING M(-)
1 LOADING M(+)

X SW12V
REG.12V
X SW5.8V
I8ECOUT
RPROUT DM
BPBOUT DM
GPYOUT DM
YOUT DM
COUT DM
I2C5CK
I2C5DT
SCURVE0
SCURVE1
AU GND
REF GND
UNREG 38V
L123 SWIDE A
DVD P OFF
SYNC DET
SLICER VIDEO
L3
I2C3DT
I2C3CK
MUTE
VSYNC
MIX R OUT DM
MIX L OUT DM
TP
IIC CLOCK
IIC DATA
VBI1
VBI2
COM MUT
OSD VIDEO OUT

I:I/O Tuner Section(Page: D)
S:Syscon/Servo/Timer Section(Page: E)
V:Video Section(Page: F)
A:VHS Audio Section(Page: G)

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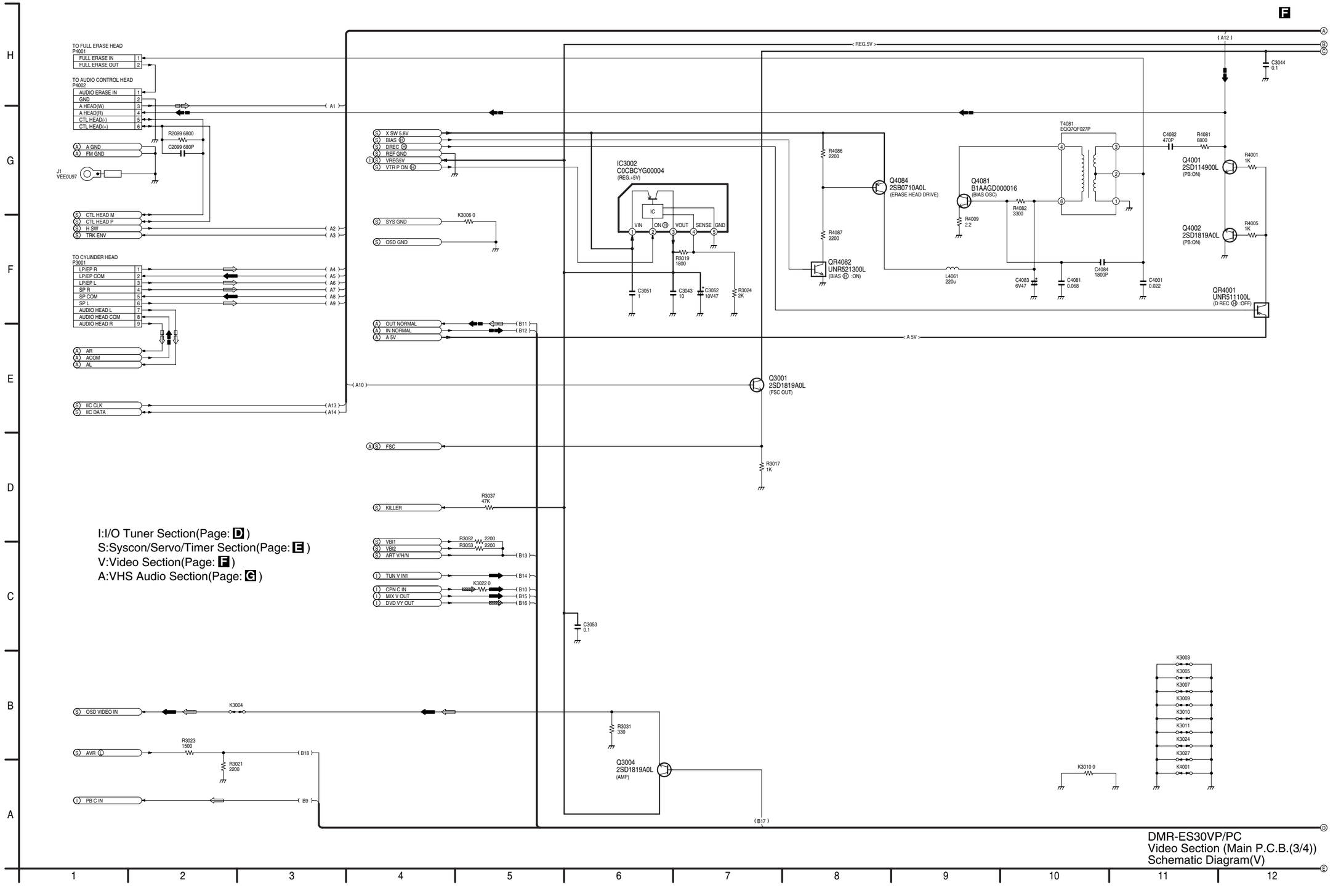
DMR-ES30VP/PC
Syscon/Servo/Timer Section (Main P.C.B.(2/4)) Schematic Diagram(S)

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

DMR-ES30VP/PC
Syscon/Servo/Timer Section
(Main P.C.B.(2/4))
Schematic Diagram(S)

24.8. Video Section (Main P.C.B.(3/4)) Schematic Diagram (V)



VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE
DVD VIDEO EE SIGNAL
DVD AUDIO EE SIGNAL

F

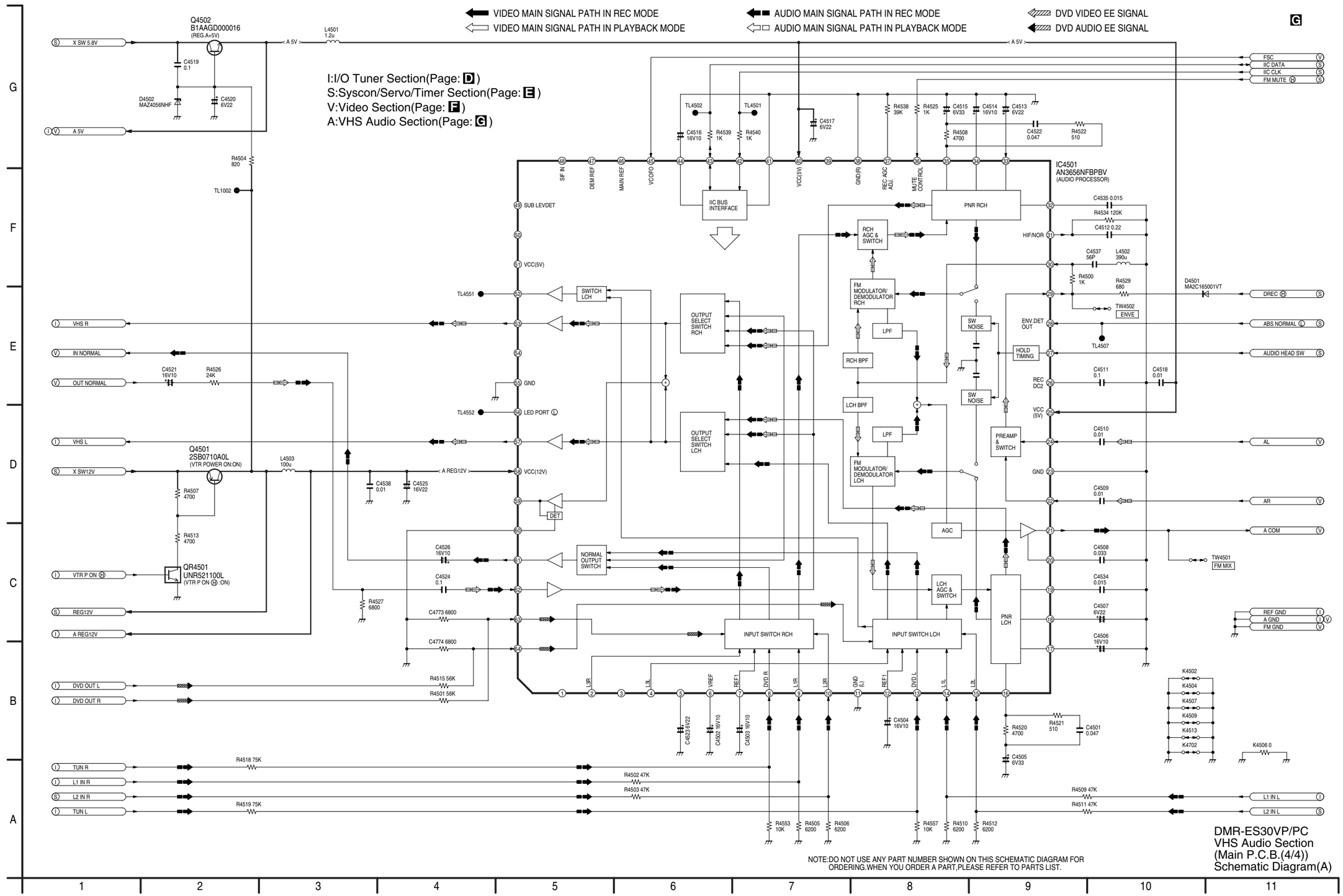
IC3001
C1AB00002083
(VIDEO/NORMAL AUDIO PROCESSOR)

DMR-ES30VP/PC
Video Section (Main P.C.B.(3/4))
Schematic Diagram(V)

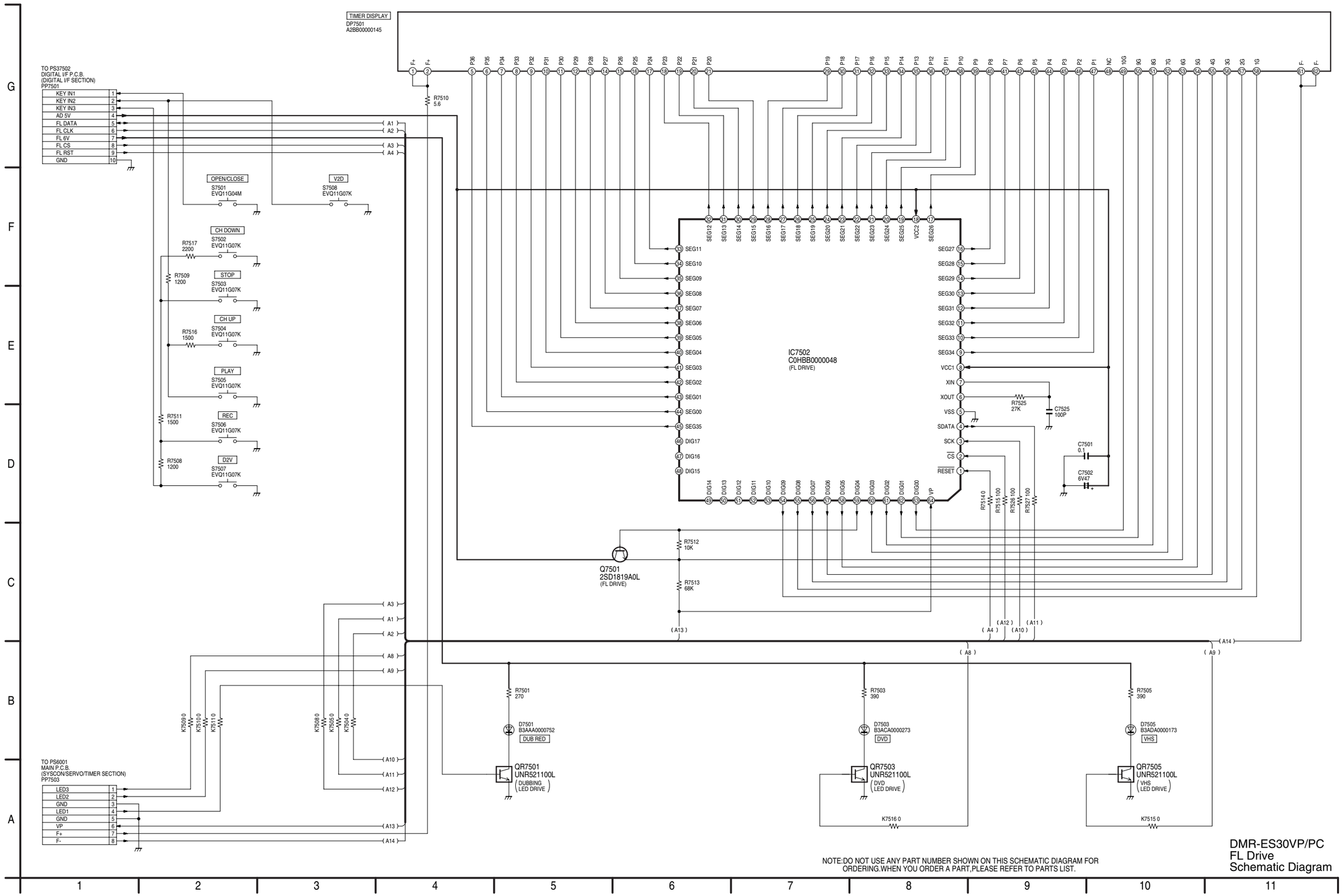
NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE SLIGHTLY DIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-ES30VP/PC
Video Section (Main P.C.B.(3/4))
Schematic Diagram(V)

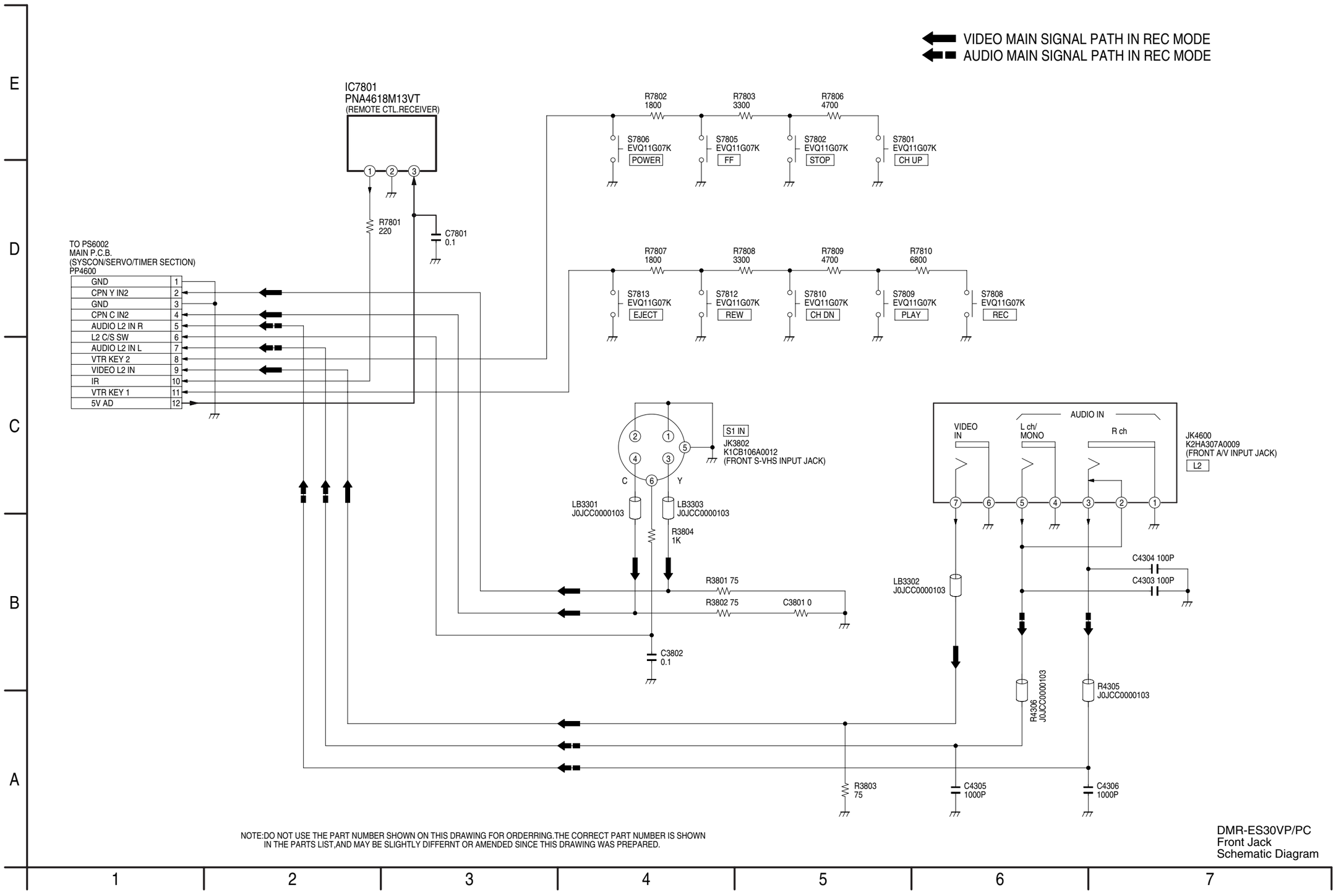
24.9. VHS Audio Section (Main P.C.B.(4/4)) Schematic Diagram (A)



24.10. FL Drive Schematic Diagram



24.11. Front Jack Schematic Diagram



NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE SLIGHTLY DIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

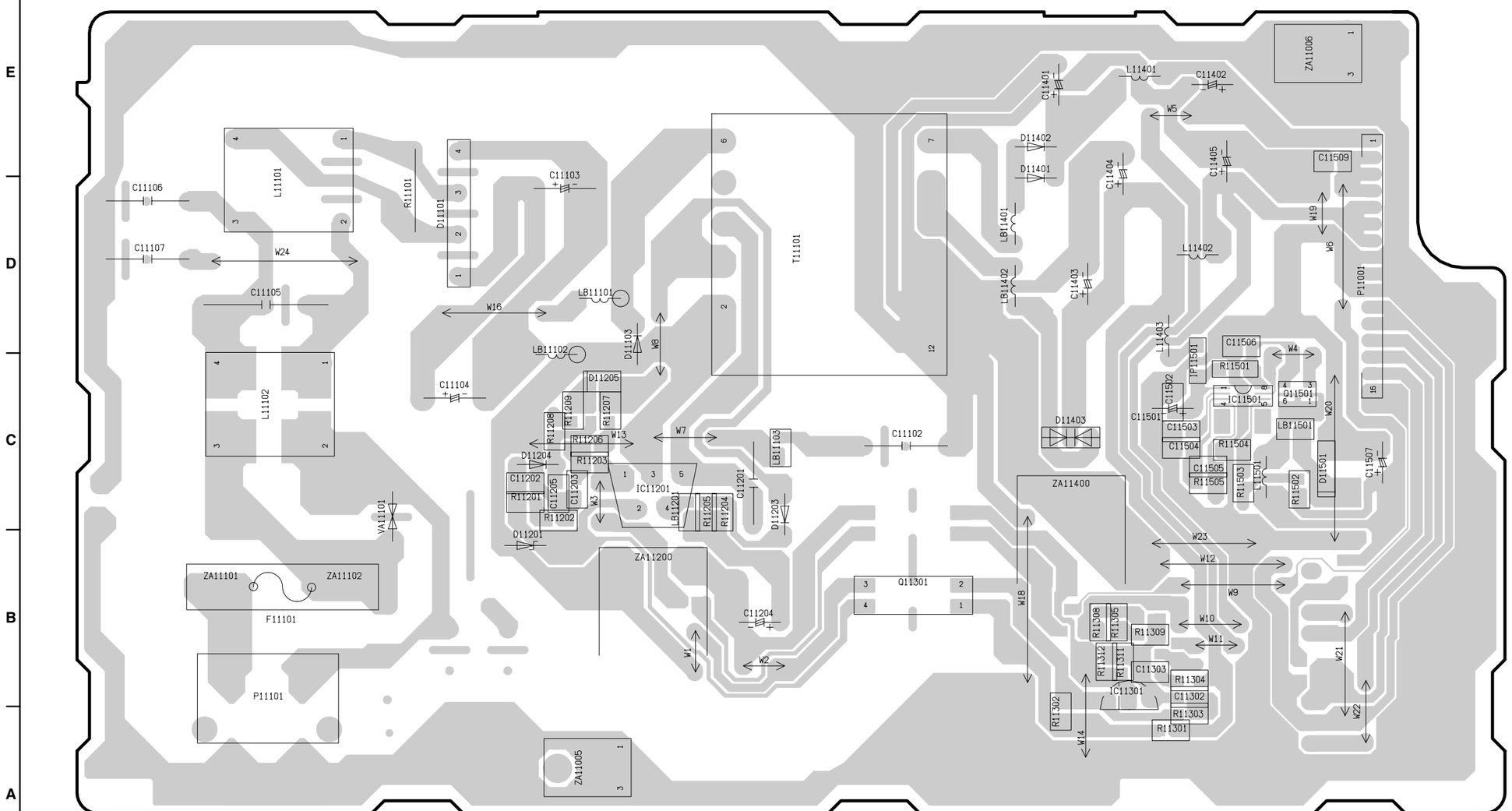
DMR-ES30VP/PC
Front Jack
Schematic Diagram

25 Print Circuit Board

25.1. Power P.C.B

Power P.C.B.													
Integrated Circuit		D11203	C-5	L11403	D-7	C11104	C-3	C11404	E-7	R11203	C-4	R11311	B-7
IC11201	C-4	D11204	C-3	L11501	C-8	C11105	D-2	C11405	E-7	R11204	C-4	R11312	B-7
IC11301	B-7	D11205	C-4	LB11101	D-4	C11106	D-1	C11501	C-7	R11205	C-4	R11501	C-7
IC11501	C-7	D11401	D-6	LB11102	C-3	C11107	D-1	C11502	C-7	R11206	C-4	R11502	C-8
Transistor		D11402	E-6	LB11103	C-5	C11201	C-5	C11503	C-7	R11207	C-4	R11503	C-7
Q11301	B-6	D11403	C-6	LB11201	C-4	C11202	C-3	C11504	C-7	R11208	C-4	R11504	C-7
Q11501	C-8	D11501	C-8	LB11401	D-6	C11203	C-4	C11505	C-7	R11209	C-4	R11505	C-7
Connector		**IC Protector**		LB11402	D-6	C11204	B-5	C11506	D-7	R11301	A-7	**Transformer**	
P11001	D-8	IP11501	D-7	LB11501	C-8	C11205	C-4	C11507	C-8	R11302	B-6	T11101	D-5
P11101	B-2	**Coil**		**Fuse**		C11302	B-7	C11509	E-8	R11303	B-7	**Varistor**	
Diode		L11101	D-2	F11101	B-2	C11303	B-7	**Resistor**		R11304	B-7	VA11101	C-3
D11101	D-3	L11102	C-2	**Capacitor**		C11401	E-6	R11101	D-3	R11305	B-7		
D11103	D-4	L11401	E-7	C11102	C-5	C11402	E-7	R11201	C-3	R11308	B-7		
D11201	B-3	L11402	D-7	C11103	D-4	C11403	D-6	R11202	C-4	R11309	B-7		

Power P.C.B.



DMR-ES30VP/PC
Power P.C.B.
(VEP01964A)

25.2. Digital I/F P.C.B

25.2.1. Digital I/F P.C.B. Address Information

Digital I/F P.C.B.

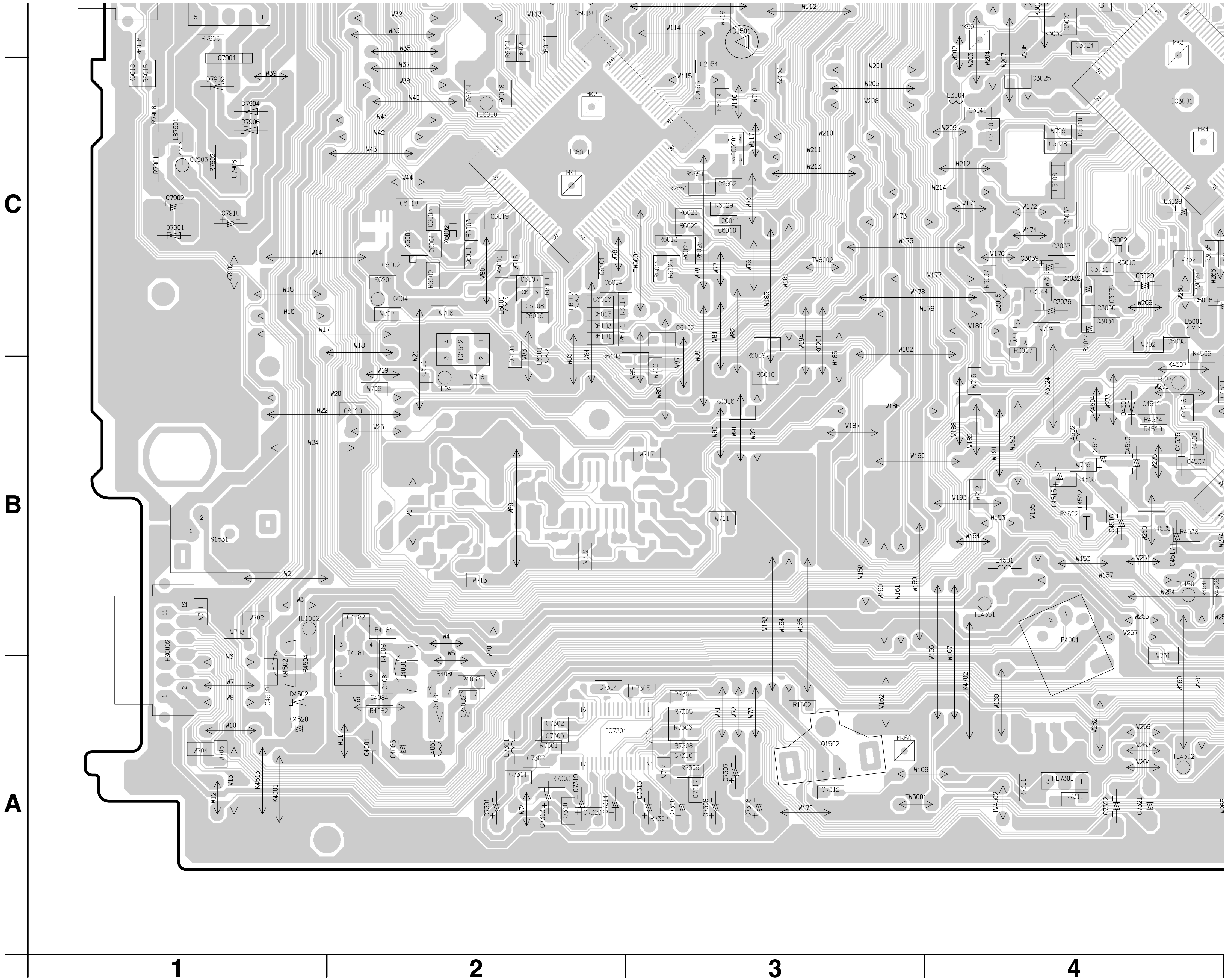
DMR-ES30VP/PC
Digital I/F P.C.B.
(VEP09136B)

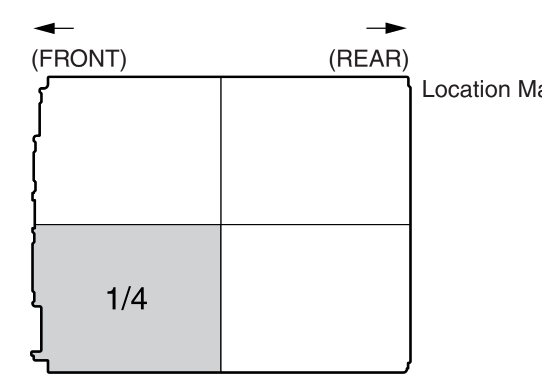
Digital I/F P.C.B.

Integrated Circuit		D37503	D-4	C15030	C-8	C45001	C-5	R37508	D-2	R45018	B-4
IC15002	C-7	**Crystal Osillator**		C15032	C-8	C45003	B-5	R37509	E-1	R45019	C-4
IC15003	C-8	X37501	C-2	C15033	B-7	C45004	B-4	R37530	D-3		
IC15004	B-8	**IC Protector**		C31507	C-6	C45005	C-5	R37531	E-3		
IC31502	D-5	IP15001	B-8	C31511	D-5	C45006	C-5	R37532	D-3		
IC31510	D-5	IP37501	E-4	C31512	D-5	C45007	C-5	R37533	E-3		
IC37001	B-6	**Coil**		C31535	D-6	C45008	C-5	R37534	D-2		
IC37501	D-2	L15002	B-7	C31536	D-5	C45010	B-4	R37535	D-2		
IC37504	D-4	L15003	C-7	C31901	A-6	C45012	B-4	R37536	D-2		
IC37505	B-2	L15004	C-8	C33502	B-2	C45013	C-5	R37537	C-2		
IC37508	C-2	L15005	C-8	C33503	B-2	C45014	C-4	R37538	C-2		
IC45001	B-5	L31501	C-3	C33504	B-2	C45019	B-4	R37540	C-2		
IC45002	C-5	L37101	A-8	C33506	B-2	C45020	B-4	R37541	C-2		
IC45003	B-4	L37501	E-4	C33507	B-2	**Resistor**		R37542	C-2		
Transistor		LB15003	B-7	C33735	A-6	R15001	B-7	R37544	D-3		
Q15001	B-7	LB15004	B-7	C33738	A-6	R15002	B-8	R37545	D-3		
Q15002	C-8	LB15005	C-8	C33740	A-7	R15005	C-7	R37546	D-3		
Q15003	C-8	LB15006	C-8	C34003	C-4	R15006	C-7	R37547	D-3		
Q33503	B-2	LB31505	C-6	C34004	C-5	R15007	C-7	R37548	D-3		
Q33504	B-2	LB31902	A-7	C37001	B-7	R15008	C-7	R37549	D-3		
Q33505	B-2	LB31903	A-8	C37104	C-3	R15010	B-8	R37550	D-3		
Q37001	B-6	LB33501	B-6	C37105	D-4	R15011	C-8	R37551	D-3		
Transistor-resistor		LB33503	B-2	C37106	D-4	R15012	C-8	R37556	D-2		
QR15001	B-8	LB33504	B-2	C37107	C-3	R15013	C-8	R37557	D-2		
QR15002	B-8	LB34002	A-7	C37507	E-4	R15014	C-8	R37558	C-2		
QR15003	C-7	LB34003	D-4	C37508	D-4	R15015	B-8	R37559	C-2		
QR15004	B-8	LB37101	C-5	C37546	C-2	R15016	B-9	R37561	D-2		
QR15005	B-8	LB37102	C-5	C37579	C-2	R15017	B-8	R37569	D-2		
QR15007	B-8	LB37103	C-5	C37580	D-3	R15018	C-8	R37571	D-2		
QR37501	C-3	LB37104	D-4	C37581	D-3	R15019	C-8	R37572	D-2		
QR37502	B-3	LB37105	D-4	C37582	D-3	R15026	B-8	R37575	D-2		
QR45006	D-8	LB37108	C-3	C37583	C-2	R15027	B-8	R37576	D-2		
QR45007	D-8	LB37109	D-4	C37584	C-2	R31501	D-5	R37577	D-2		
QR45008	E-8	LB37409	D-5	C37585	C-2	R31502	D-5	R37578	D-2		
QR45009	D-8	LB37506	B-3	C37588	C-2	R31503	D-5	R37583	D-2		
Test Point		LB37507	C-2	C37589	D-2	R31512	C-6	R37584	D-2		
TL37503	D-2	LB37508	D-3	C37592	D-3	R31513	D-5	R37585	D-2		
TL37504	D-2	LB37509	D-2	C37593	D-3	R33503	B-2	R37595	D-1		
TL37509	D-2	**Capacitor**		C37595	D-2	R33504	B-2	R37596	B-3		
TL37518	B-3	C15001	B-7	C37596	D-2	R33505	B-2	R37597	B-2		
TL37519	B-3	C15008	C-7	C37597	D-3	R33506	B-2	R37600	D-2		
TL37520	B-3	C15009	C-7	C37598	D-3	R33507	B-2	R37604	D-1		
TW37501	B-1	C15010	C-7	C37599	D-3	R33508	B-2	R37605	D-1		
Connector		C15011	C-7	C37600	D-3	R33510	B-2	R37606	D-1		
P12100	B-8	C15012	C-7	C37601	D-3	R33511	B-2	R37611	C-2		
P15001	B-8	C15013	C-7	C37602	D-2	R34002	D-4	R37612	C-2		
P15003	B-7	C15015	C-7	C37603	D-1	R34005	C-4	R37613	C-2		
P31901	A-7	C15017	B-8	C37604	D-2	R34006	C-4	R37633	D-2		
P31902	A-6	C15018	B-8	C37607	C-2	R34007	C-4	R45001	C-5		
P31903	A-6	C15019	B-8	C37609	D-1	R34008	C-4	R45002	C-5		
P31905	A-1	C15020	B-8	C37610	D-1	R34009	C-4	R45003	C-5		
P39702	C-4	C15021	B-8	C37626	B-2	R34010	C-4	R45004	B-4		
PS37502	D-1	C15022	C-8	C37633	B-2	R34011	A-7	R45005	B-4		
Diode		C15024	C-8	C37636	B-3	R37001	B-6	R45006	B-4		
D15001	C-7	C15025	B-8	C37652	D-2	R37003	B-6	R45007	B-4		
D15002	C-8	C15026	B-8	C39001	C-4	R37004	C-6	R45008	B-4		
D15003	C-8	C15027	B-8	C39002	C-4	R37501	D-2	R45009	B-4		
D31501	D-5	C15028	B-9	C39003	C-4	R37505	C-3	R45014	D-8		
D37502	B-1	C15029	B-8	C39010	B-2	R37507	E-2	R45015	D-8		

25.3. Main P.C.B.

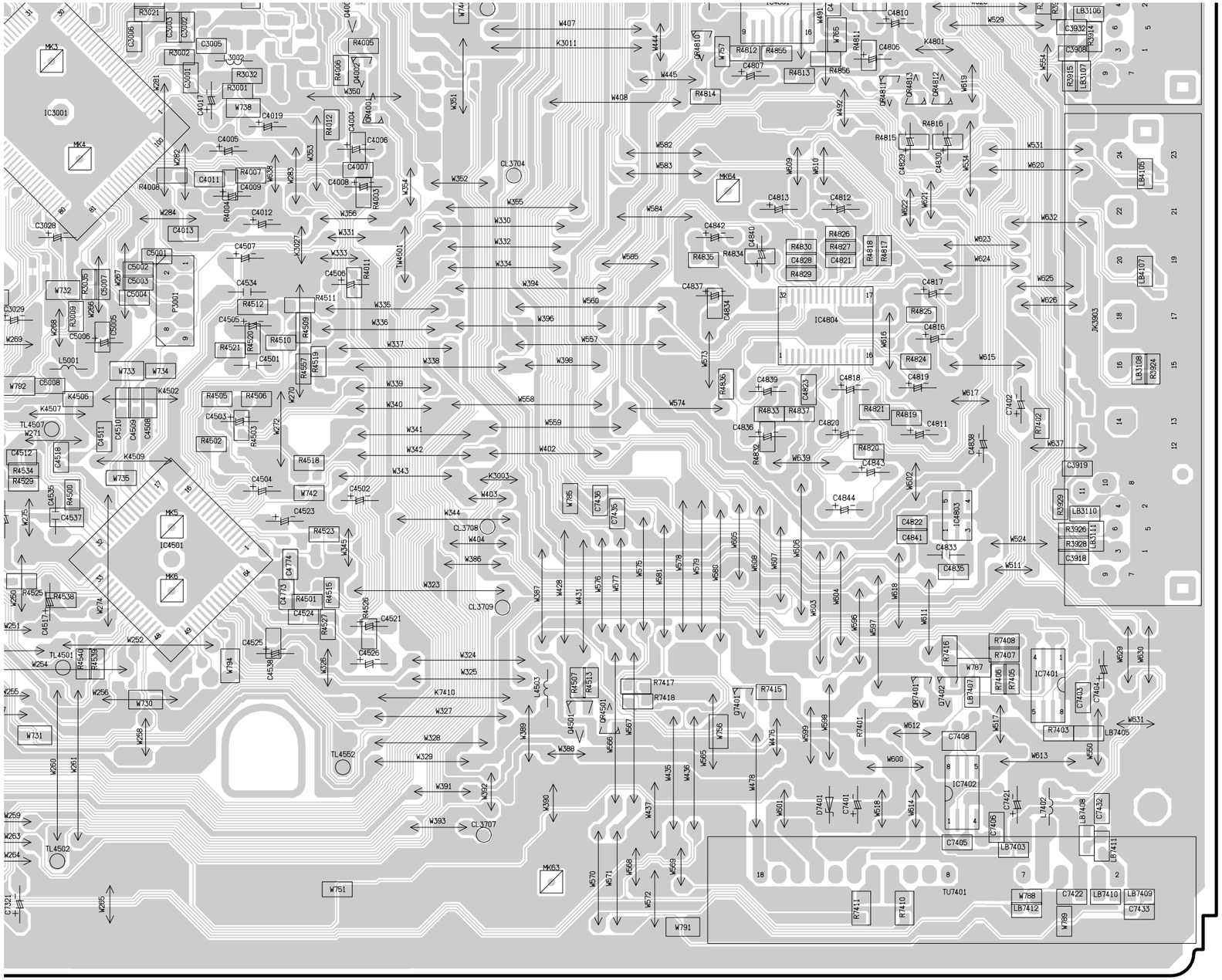
25.3.1. Main P.C.B. (1/4 Section)

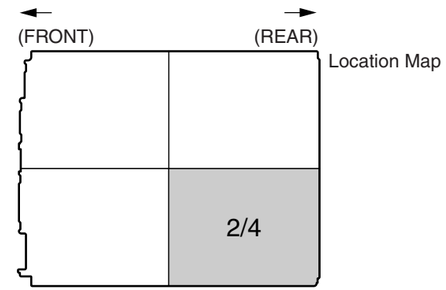




DMR-ES30VP
Main P.C.B. (VEP06F98A)
(1/4 Section)

25.3.2. Main P.C.B. (2/4 Section)

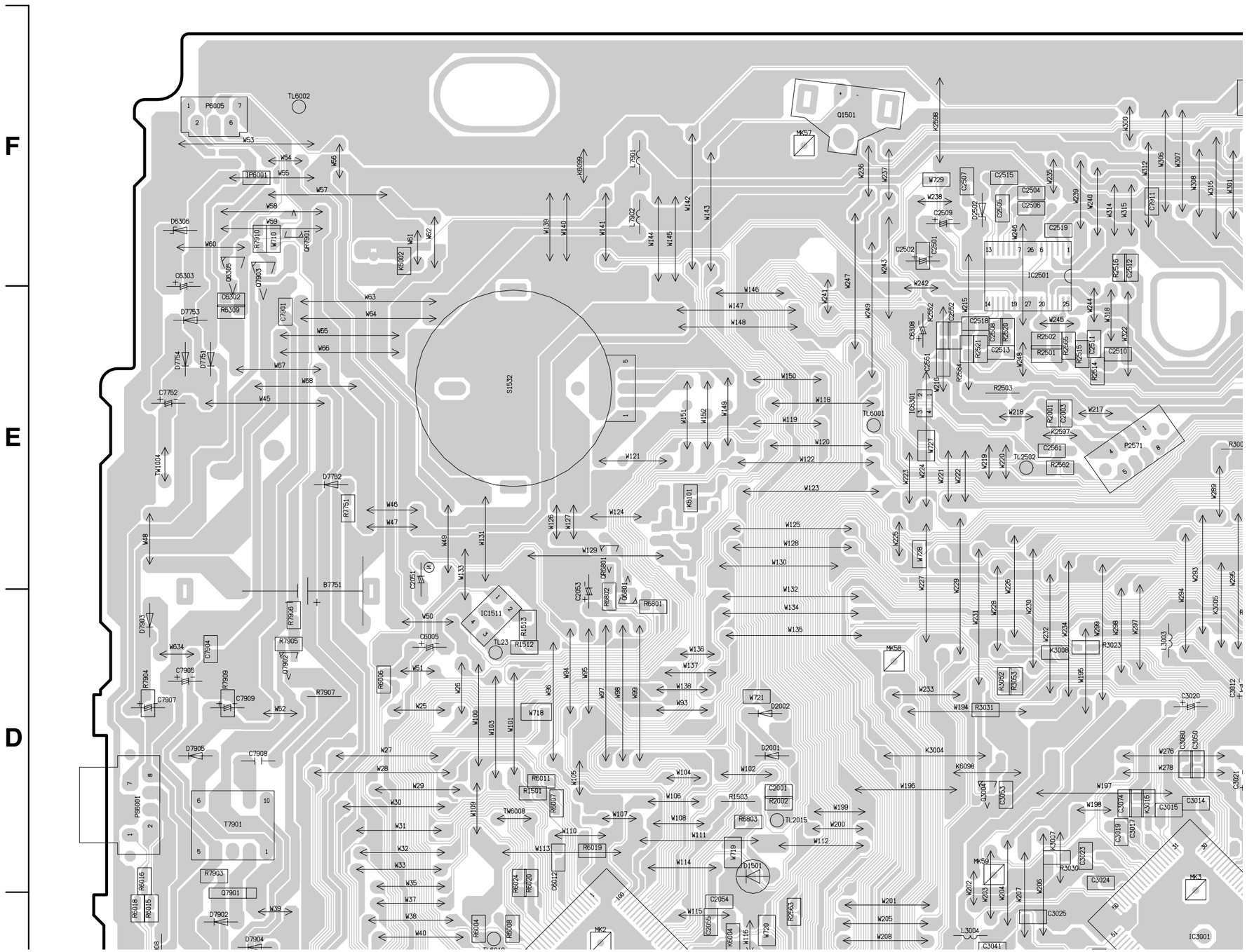




Location Map

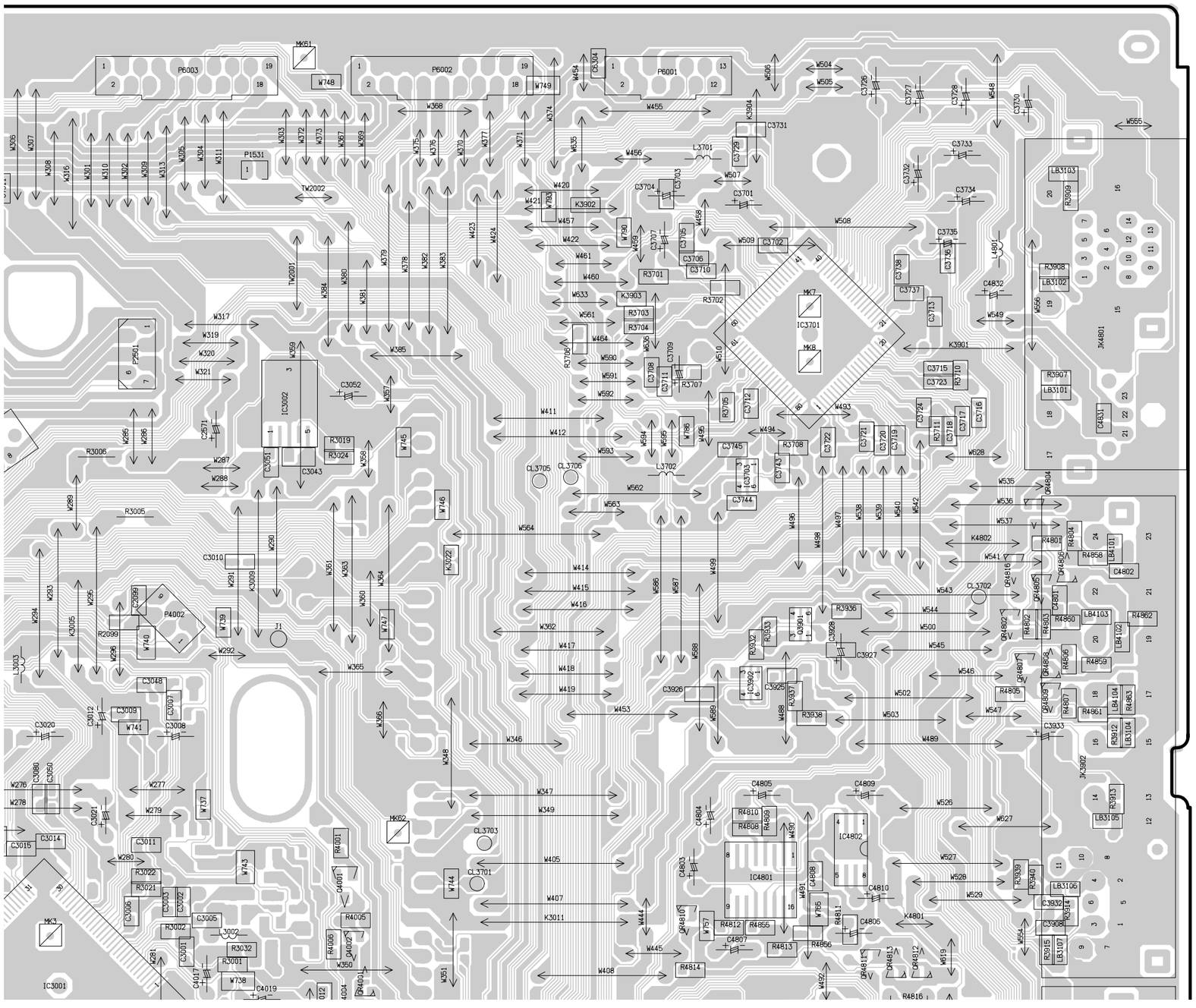
DMR-ES30VP
Main P.C.B. (VEP06F98A)
(2/4 Section)

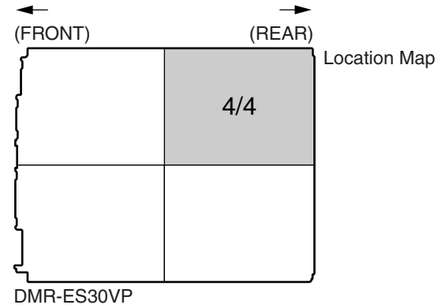
25.3.3. Main P.C.B. (3/4 Section)



DMR-ES30VP
Main P.C.B. (VEP06F98A)
(3/4 Section)

25.3.4. Main P.C.B. (4/4 Section)





DMR-ES30VP
Main P.C.B. (VEP06F98A)
(4/4 Section)

25.3.5. Main P.C.B. Address Information

Main P.C.B.

Integrated Circuit	
IC1511	D-2
IC1512	C-2
IC2501	F-4
IC3001	C-4
IC3002	E-5
IC3701	E-7
IC3703	E-6
IC3902	D-6
IC4501	B-5
IC4801	D-7
IC4802	D-7
IC4803	B-7
IC4804	C-7
IC6001	C-2
IC6201	C-3
IC6301	E-3
IC7301	A-2
IC7401	B-7
IC7402	A-7
Transistor	
Q1501	F-3
Q1502	A-3
Q3001	C-4
Q3004	D-4
Q3901	D-7
Q4001	D-5
Q4002	C-5
Q4081	A-2
Q4084	A-2
Q4501	B-6
Q4502	A-1
Q6305	F-1
Q6801	E-2
Q7401	B-6
Q7402	B-7
Q7901	C-1
Q7902	D-1
Q7903	F-1
Transistor-resistor	
QR4001	C-5
QR4082	A-2
QR4501	B-6
QR4802	D-7
QR4804	E-7
QR4805	E-7
QR4806	E-7
QR4807	D-7
QR4808	D-7
QR4809	D-7
QR4810	D-6
QR4811	C-7
QR4812	C-7
QR4813	C-7
QR4816	E-7
QR6801	E-2
QR7401	B-7
QR7901	F-1
Test Point	
CL3701	D-6
CL3702	E-7
CL3703	D-6
CL3704	C-6
CL3705	E-6
CL3706	E-6
CL3707	A-6
CL3708	B-6
CL3709	B-6
TL23	D-2
TL24	B-2
TL1002	B-1
TL2015	D-3
TL2502	E-4
TL4501	B-4
TL4502	A-4
TL4507	B-4
TL4551	B-4
TL4552	A-5
TL6001	E-3
TL6002	F-1
TL6004	C-2
TL6010	C-2
TW1004	E-1
TW2001	F-5
TW2002	F-5
TW3001	A-3
TW4501	C-5
TW4502	A-4
TW6001	C-3
TW6002	C-3
TW6008	D-2
Connector	
JK3902	D-8
JK3903	C-8
JK4801	E-8
P1531	F-5
P2501	E-5
P2571	E-4
P3001	C-5
P4001	B-4
P4002	D-5
P6001	F-6
P6002	F-6
P6003	F-5
P6005	F-1
PS6001	D-1
PS6002	B-1
Diode	
D1501	D-3
D2001	D-3
D2002	D-3
D2502	F-4
D4501	B-4
D4502	A-1
D6306	F-1
D7401	A-7
D7751	E-1
D7752	E-1
D7753	E-1
D7754	E-1
D7901	C-1
D7902	C-1
D7903	D-1
D7904	C-1
D7905	D-1
D7906	C-1
Crystal Osillator	
X3002	C-4
X6001	C-2
X6002	C-2
IC Protector	
IP6001	F-1
Coil	
L3002	D-5
L3003	D-4
L3004	C-4
L3005	C-4
L3006	C-4
L3701	F-6
L3702	E-6
L4061	A-2
L4501	B-4
L4502	B-4
L4503	B-6
L4801	F-7
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LB3105	D-8
LB3106	D-7
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LB3110	B-7
LB3111	B-7
LB4101	E-8
LB4102	D-8
LB4103	D-8
LB4104	D-8
LB4105	C-8
LB4107	C-8
LB7403	A-7
LB7405	B-7
LB7407	B-7
LB7408	A-7
LB7409	A-8
LB7410	A-8
LB7411	A-7
LB7412	A-7
LB7901	C-1
Filter	
FL7301	A-4
Capacitor	
C2001	D-3
C2003	E-4
C2051	E-2
C2053	D-2
C2054	C-3
C2055	C-3
C2099	E-5
C2501	F-3
C2502	F-3
C2504	F-4
C2505	F-4
C2506	F-4
C2507	F-4
C2508	E-4
C2509	F-4
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C2518	E-4
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C2551	E-4
C2552	E-4
C2561	E-4
C2562	C-3
C2571	E-5
C3001	C-5
C3002	D-5
C3003	D-5
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C3006	D-5
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C3008	D-5
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C3019	D-4
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C3040	C-4
C3041	C-4
C3043	E-5
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C3048	D-5
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C3051	E-5
C3052	E-5
C3053	D-4
C3074	D-4
C3080	D-4
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C4006	C-5
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C6003	C-2
C6004	C-2
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C6007	C-2
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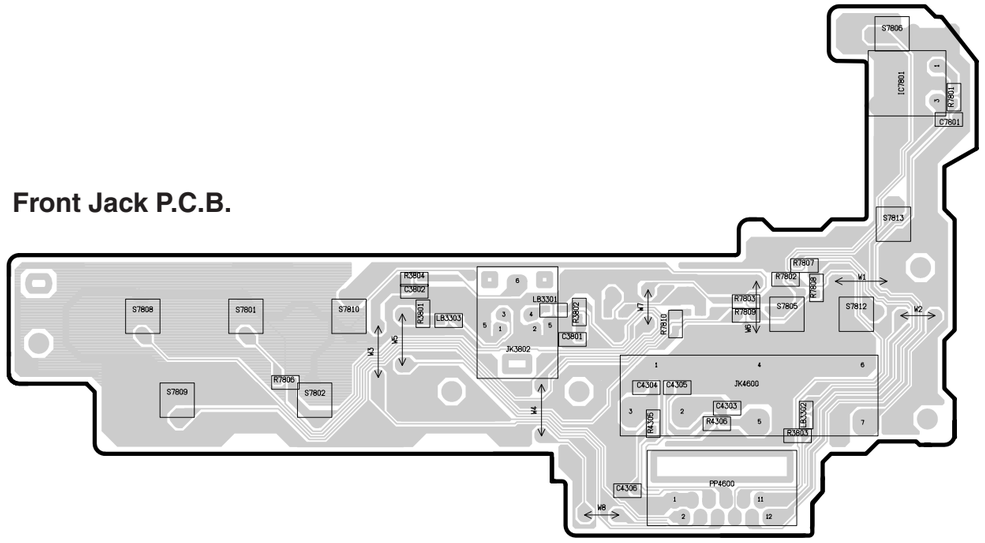
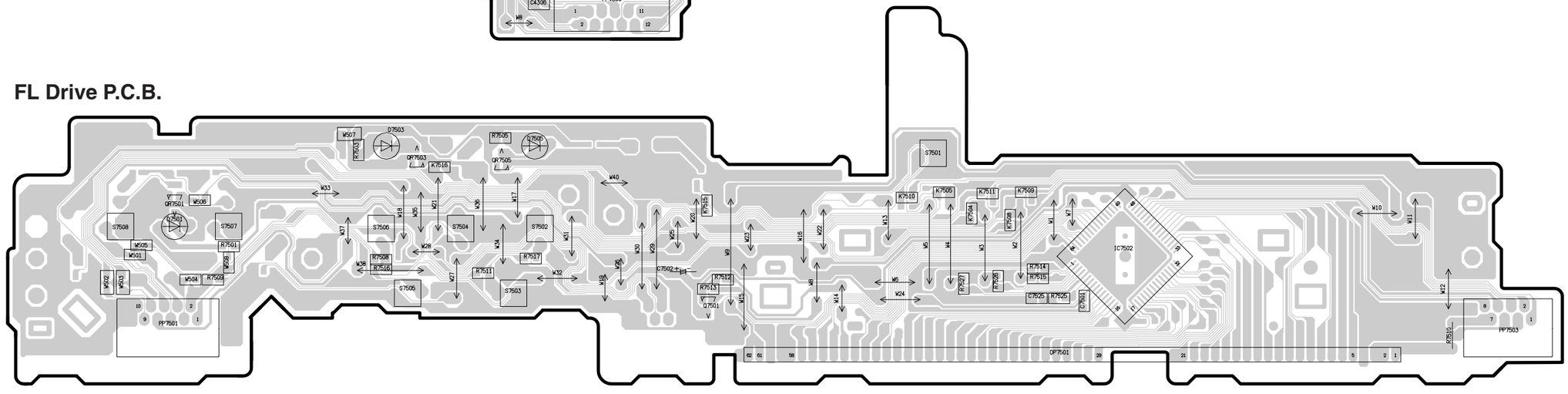
C6009	C-2
C6010	C-3
C6011	C-3
C6012	D-2
C6014	C-2
C6015	C-2
C6016	C-2
C6018	C-2
C6019	C-2
C6020	B-2
C6101	C-2
C6102	C-3
C6103	C-2
C6104	C-2
C6302	E-1
C6303	F-1
C6304	F-6
C6308	E-3
C7301	A-2
C7302	A-2
C7303	A-2
C7304	A-2
C7305	A-3
C7306	A-3
C7307	A-3
C7308	A-3
C7309	A-2
C7310	A-2
C7311	A-2
C7312	A-3
C7313	A-2
C7314	A-2
C7315	A-3
C7316	A-3
C7317	A-3
C7318	A-3
C7319	A-2
C7320	A-2
C7321	A-4
C7322	A-4
C7401	A-7
C7402	B-7
C7403	B-7
C7404	B-7
C7405	A-7
C7406	A-7
C7408	A-7
C7421	A-7
C7422	A-7
C7432	A-7
C7433	A-8
C7435	B-6
C7436	B-6
C7752	E-1
C7901	E-1
C7902	C-1
C7903	C-1
C7904	D-1
C7905	D-1
C7906	C-1
C7907	D-1
C7908	D-1
C7909	D-1
C7910	C-1
C7911	F-4
Resistor	
R1501	D-2
R1502	A-3
R1503	D-3
R1511	B-2
R1512	D-2
R1513	D-2
R2001	E-4
R2002	D-3
R2099	D-5
R2501	E-4
R2502	E-4
R2503	E-4
R2514	E-4
R2515	E-4
R2516	F-4
R2520	E-4
R2521	E-4
R2551	C-3
R2552	E-4
R2561	C-3
R2562	E-4
R2563	C-3
R2564	E-4
R2565	E-4
R3001	C-5
R3002	D-5
R3005	E-5
R3006	E-4
R3009	C-4
R3013	C-4
R3014	C-4
R3017	C-4
R3019	E-5
R3021	D-5
R3022	D-5
R3023	D-4
R3024	E-5
R3030	D-4
R3031	D-4
R3032	C-5
R3035	C-4
R3037	C-4
R3052	D-4
R3053	D-4
R3701	F-6
R3702	E-6
R3703	E-6
R3704	E-6
R3705	E-6
R3706	E-6
R3707	E-6
R3708	E-7
R3710	E-7
R3711	E-7
R3907	E-7
R3908	F-7
R3909	F-7
R3912	D-8
R3913	D-8
R3914	D-7
R3915	C-7
R3924	C-8
R3926	B-7
R3928	B-7
R3929	B-7
R3932	D-7
R3933	D-7
R3936	E-7
R3937	D-7
R3938	D-7
R3939	D-7
R3940	D-7
R4001	D-5
R4003	C-5
R4004	C-5
R4005	D-5
R4006	C-5
R4007	C-5
R4008	C-5
R4009	B-2
R4011	C-5
R4012	C-5
R4081	B-2
R4082	A-2
R4086	A-2
R4087	A-2
R4500	B-4
R4501	B-5
R4502	B-5
R4503	B-5
R4504	A-1
R4505	C-5
R4506	C-5
R4507	B-6
R4508	B-4
R4509	C-5
R4510	C-5
R4511	C-5
R4512	C-5
R4513	B-6
R4515	B-5
R4518	B-5
R4519	C-5
R4520	C-5
R4521	C-5
R4522	B-4
R4525	B-4
R4526	B-5
R4527	B-5
R4529	B-4
R4534	B-4
R4538	B-4
R4539	B-4
R4540	B-4
R4553	B-5
R4557	C-5
R4801	E-7
R4802	D-7
R4803	D-7
R4804	E-7
R4805	D-7
R4806	D-7
R4807	D-7
R4808	D-6
R4809	D-7
R4810	D-6
R4811	D-7
R4812	D-6
R4813	C-7
R4814	C-6
R4815	C-7
R4816	C-7
R4817	C-7
R4818	C-7
R4819	B-7
R4820	B-7
R4821	B-7
R4824	C-7
R4825	C-7
R4826	C-7
R4827	C-7
R4829	C-7
R4830	C-7
R4832	B-6
R4833	B-7
R4834	C-6
R4835	C-6
R4836	C-6
R4837	B-7
R4855	D-7
R4856	D-7
R4858	E-8
R4859	D-8
R4860	D-7
R4861	D-8
R4862	D-8
R4863	D-8
R6001	C-2
R6002	C-2
R6003	C-2
R6004	C-2
R6005	D-2
R6006	D-2
R6007	D-2
R6008	C-2
R6009	C-3
R6010	B-3
R6011	D-2
R6012	C-3
R6013	C-3
R6015	C-1
R6016	D-1
R6017	C-3
R6018	C-1
R6019	D-2
R6020	D-2
R6022	C-3
R6023	C-3
R6024	D-2
R6026	C-3
R6027	C-3
R6028	C-3
R6029	C-3
R6101	C-2
R6102	C-3
R6103	B-3
R6201	C-2
R6309	E-1
R6801	D-3
R6802	D-2
R6803	D-3
R7301	A-2
R7303	A-2
R7304	A-3
R7305	A-3
R7306	A-3
R7307	A-3
R7308	A-3
R7309	A-3
R7310	A-4
R7311	A-4
R7401	B-7
R7402	B-7
R7403	B-7
R7405	B-7
R7406	B-7
R7407	B-7
R7408	B-7
R7410	A-7
R7411	A-7
R7415	B-7
R7416	B-7
R7417	B-6
R7418	B-6
R7751	E-2
R7901	C-1
R7902	C-1
R7903	D-1
R7904	D-1
R7905	D-1
R7906	D-1
R7907	D-1
R7908	C-1
R7909	D-1
R7910	F-1
Transformer	
T4081	A-2
T7901	D-1
Backup Battery	
B7751	D-1

25.4. Front Jack P.C.B. , FL Drive P.C.B

Front Jack P.C.B.



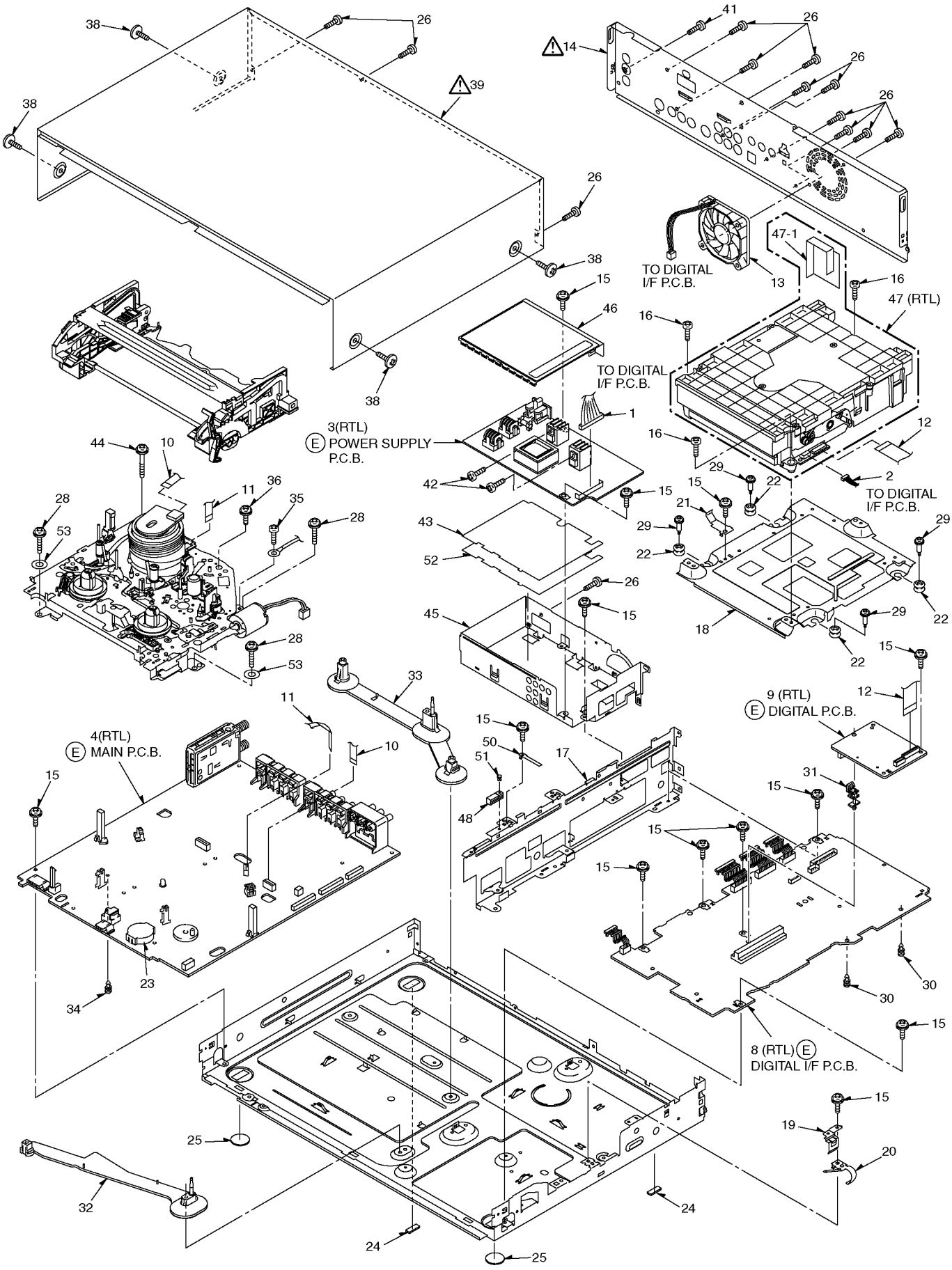
FL Drive P.C.B.



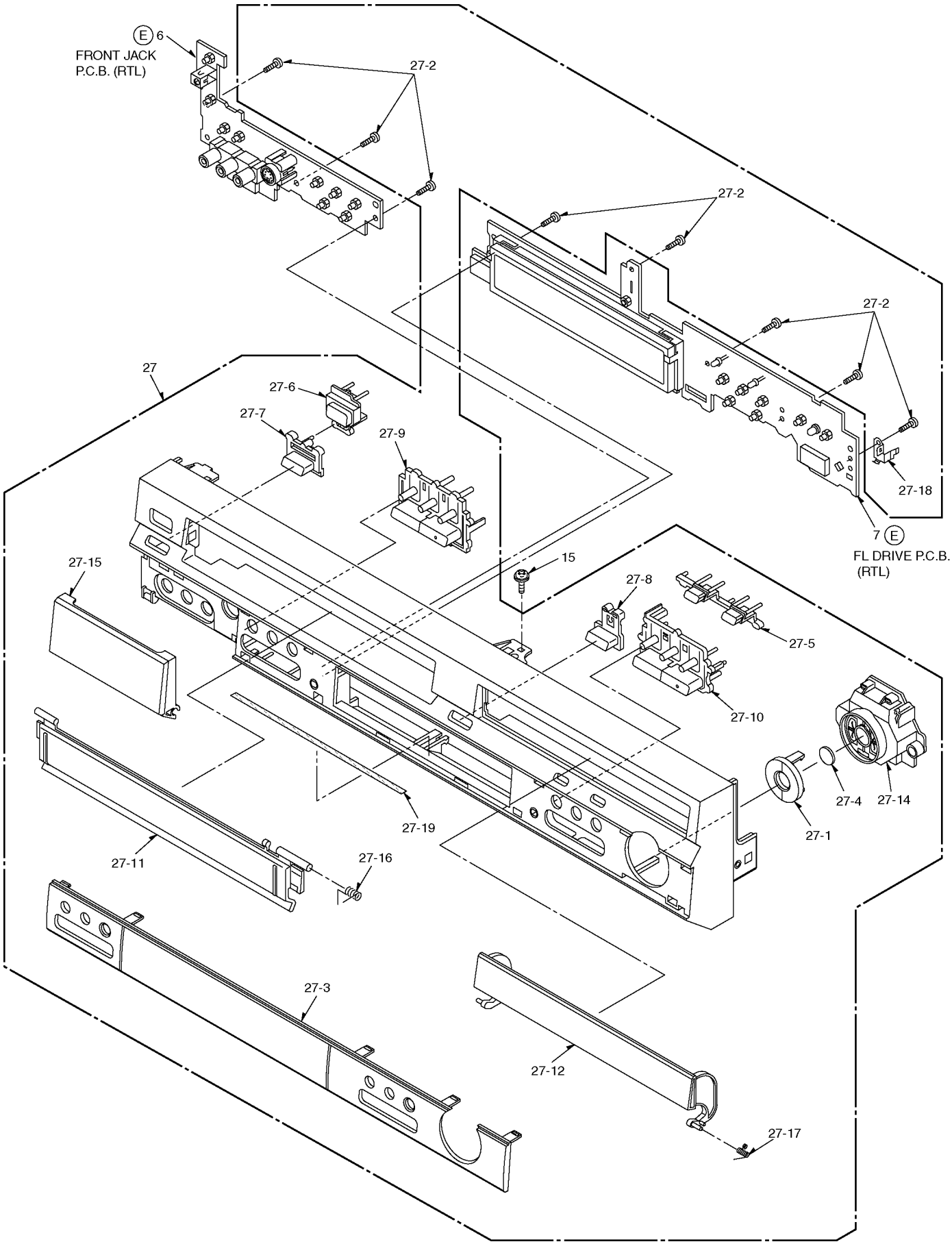
DMR-ES30VP/PC
Front Jack P.C.B. (VEP04885B)
FL Drive P.C.B. (VEP07A78B)

26 Exploded Views

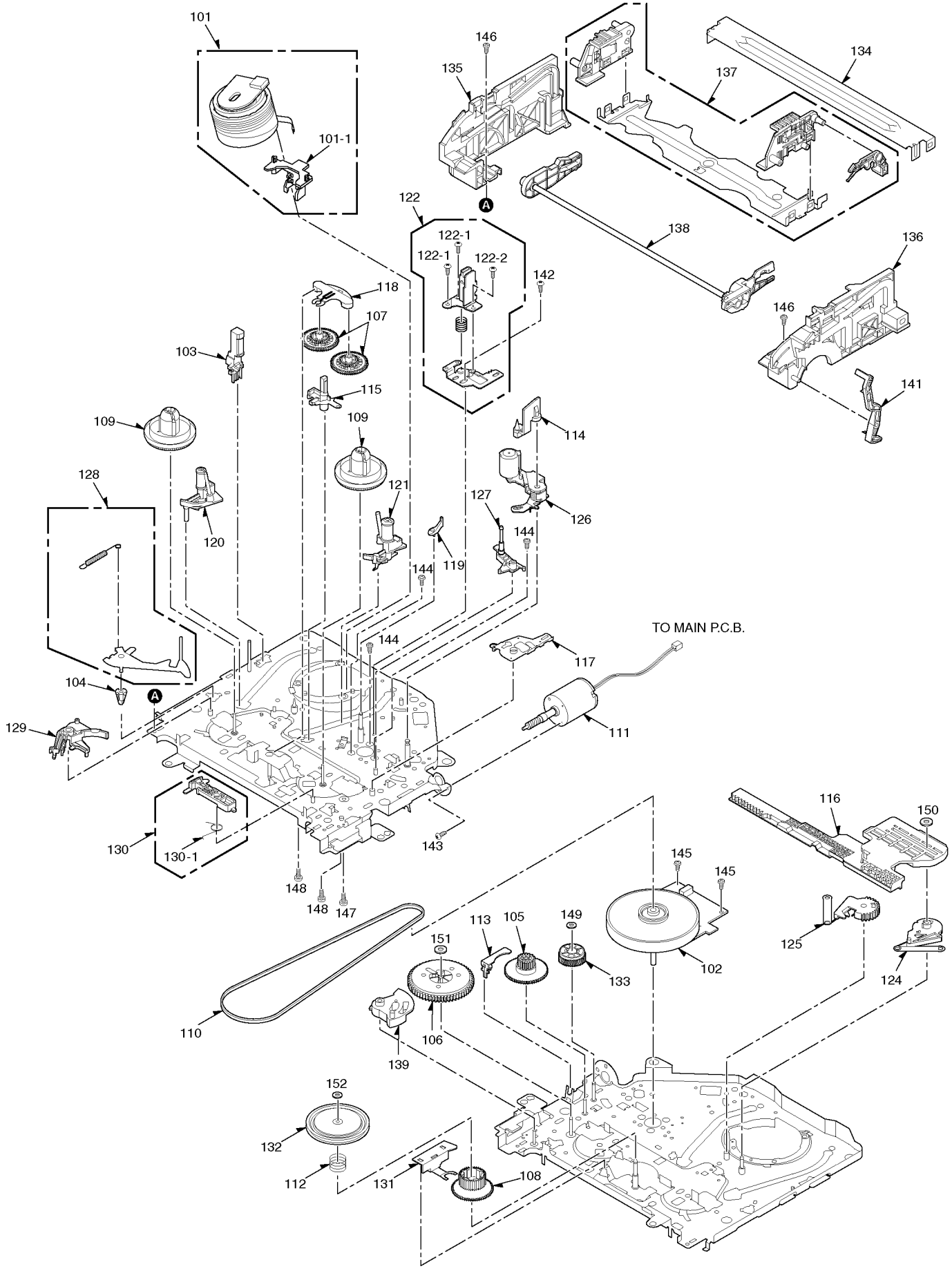
26.1. Casing Parts & Mechanism Section 1



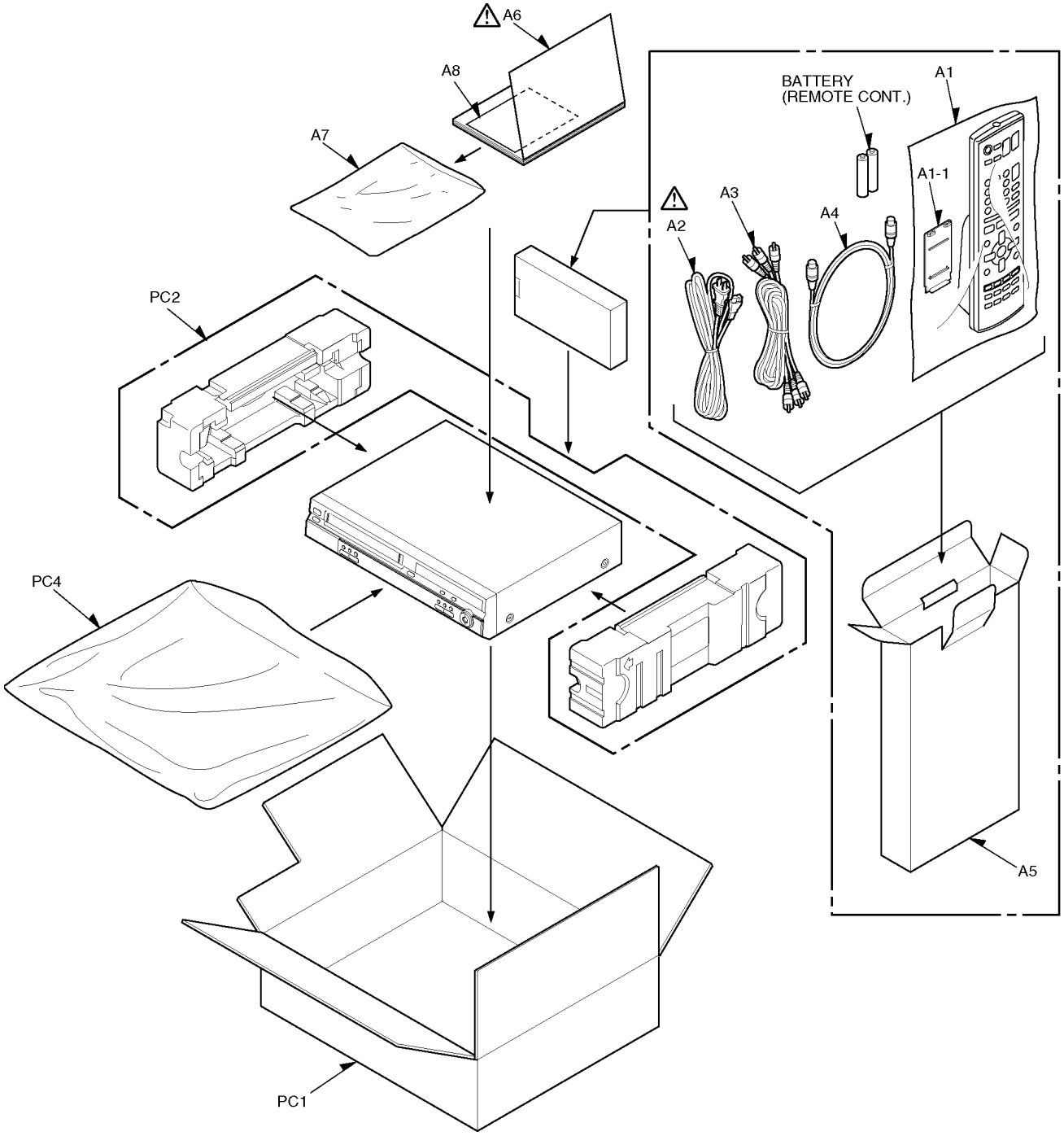
26.2. Casing Parts & Mechanism Section 2



26.3. VHS Mechanism Section



26.4. Packing & Accessories Section



27 Replacement Parts List

Notes:

*Important safety notice:

Components identified by ⚠ mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacturers specified parts shown in the parts list.

*Warning: This product uses a laser diode. Refer to caution statements.

*Capacity values are in microfarads (μF) unless specified otherwise, P=Pico-farads (pF), F=Farads (F).

*Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM).

*The marking (RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.

*"<IA>-<IB>", marks in Remarks indicate languages of instruction manuals. [<IA>: Canadian French, <IB>: English French]

*Parts indicated with [SPC] in the Remarks column are supplied by PAVC (SPC).

*All parts except parts indicated with [SPC] in Remarks column are supplied by PAVCSG.

*All parts remarked <J> are for only "Made in Japan" model.

All parts remarked <M> are for only "Made in Malaysia" model.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
n	01	CASING/ACCESSORY/PACKING		
1	VEE0Z83	WIRE WITH CONNECTOR(16P)	1	
2	VEE1A64	WIRE WITH CONNECTOR(4P)	1	
3	VEP01964A	POWER SUPPLY P.C.B.	1	(RTL)
4	VEP06F98AT	MAIN P.C.B.	1	(RTL)
6	VEP04885B	FRONT JACK P.C.B.	1	(RTL)
7	VEP07A78B	FL DRIVE P.C.B.	1	(RTL)
8	VEP09136B	DIGITAL I/F P.C.B.	1	(RTL)
9	VEP79104E	DIGITAL P.C.B.	1	(RTL) (P)
9	RFKBES30VPC	DIGITAL P.C.B.	1	(RTL) (PC)
10	VWJ1727	FFC(7P)	1	
11	VWJ1728	FFC(6P)	1	
12	VWJ1776	FFC(40P)	1	
13	L6FAKCCE0004	SMALL DC FAN MOTOR	1	
14	RGR0355A-A	REAR PANEL	1	(P) ⚠
14	RGR0355A-B	REAR PANEL	1	(P) <SPC> ⚠ <J>
14	RGR0355A-C	REAR PANEL	1	(PC) ⚠
15	RHD30111-3	SCREW	14	
16	RHD30115-3	SCREW	3	
17	RMA1897	CENTER ANGLE	1	
18	RMA1905	DVD ANGEL	1	
19	RMA1914	DIGITAL ANGLE	1	
20	RMC0622	EARTH SPRING (DIGITAL)	1	
21	RMC0632	EARTH SPRING	1	
22	RMG0677-K	DAMPER	4	
23	RMZ0776	CELL COVER	1	
24	VKA0382	LEG CUSHION	2	
25	VKA0385	LEG	2	
26	VHD0690-1	SCREW	13	
27	RYP1277-S	FRONT PANEL ASS'Y	1	(P)
27	RYP1277H-S	FRONT PANEL ASS'Y	1	(PC)
27-1	RGU2375-S	DUB BUTTON (2)	1	
27-2	RHD26045-L	SCREW	8	
27-3	RKW0777-S	FRONT WINDOW	1	
27-4	RKW0781-Q	DUB WINDOW	1	
27-5	RGL0673-W	PANEL LIGHT	1	
27-6	RGU2369-W	POWER BUTTON	1	
27-7	RGU2370-S	EJECT BUTTON	1	
27-8	RGU2371-S	OPEN BUTTON	1	
27-9	RGU2372D-S	PLAY BUTTON (VHS)	1	
27-10	RGU2373D-S	PLAY BUTTON (DVD)	1	
27-11	RKF0722-S	BLINDER PANEL	1	
27-12	RKF0723-S	TRAY DOOR	1	
27-14	RGU2374-H	DUB BUTTON (1)	1	
27-15	RYF0762-S	DOOR ASS'Y	1	
27-16	VMB2521	BLINDER SPRING	1	
27-17	VMB3410	TRAY SPRING	1	
27-18	RMC0636	EARTH SPRING [D]	1	
27-19	RMX0330	WINDOW SHEET	1	
28	VHD1453	SCREW	3	
29	VHD1662	SCREW	4	
30	VKC0295	PCB HOLDER	2	
31	VKC0612	PCB SPACER	1	
32	VMX3115	MECHA SPACER(F)	1	
33	VMX3229	MECHA SPACER(R)	1	
34	VMX3277	SPACER	1	
35	XTV26+5FFJ	SCREW	1	
36	XTW3+10PN	SCREW	1	
38	RHD30113	SCREW	4	
39	VGM2077	TOP PANEL	1	⚠
41	XSN3+4FJK	SCREW	1	
42	XYN3+F8FJ	SCREW	2	
43	RMZ0778	POWER BARRIER	1	
44	VHD1452-2	SCREW	1	
45	RSC0770A	SHIELD CASE (B)	1	
46	VSC5586	SHIELD CASE (T)	1	
47	RFKNVXY1867	RAM DRIVE UNIT	1	(RTL) <SPC>
47-1	RMV0302	BARRIER	1	<SPC>
48	K4ZZZZ000008	GASKET	1	
50	RMC0637	EARTH SPRING [C]	1	
51	VGQ8142	RIVET	1	
52	RMZ0788	SP.BARRIER(C)	1	
53	RMX0336	WASHER	2	
101	VEG1641KIT	RDD CYLINDER ASS'Y	1	
101-1	VMD4983	FPC HOLDER	1	
102	VEM0750T	CAPSTAN MOTOR	1	
103	L1AZ00000004	FE HEAD ASS'Y	1	
104	VDB1431	TENSION ARM BOSH	1	
105	VDG1510	INTERMEDIATE GEAR	1	
106	VDG1511	MAIN CAM GEAR	1	
107	VDG1512	IDLER GEAR	2	
108	VDG1514	CHANGE GEAR	1	
109	VDR0372A	REEL TABLE	2	
110	VDV0391	CAPSTAN BELT	1	
111	VEM0797	LOADING MOTOR	1	
112	VMB3550	CHANGING GEAR SPRING	1	
113	VMD4987	WORM SHAFT HOLDER	1	
114	VMD4252	OPENER PIECE	1	
115	VMD4253	LED PRISM	1	
116	VML3624	MAIN LEVER	1	
117	VML3626	PINCH CHARGE ARM	1	
118	VML3632	IDLER ARM	1	
119	VMX3092	P4 CAP	1	
120	VXA7105	S SHAFT HOLDER	1	
121	VXA7106	T SHAFT HOLDER	1	
122	L1AE00000036	AC HEAD ASS'Y	1	
122-1	VHD1066	SCREW	2	
122-2	VHD1185	SCREW	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
124	VXL3107	S LOADING ARM	1	
125	VXL3108	T LOADING ARM	1	
126	VXL3109-6	PINCH ARM	1	
127	VXL3110	P5 ARM	1	
128	VXL3111-1	TENSION ARM	1	
129	VXL3252	S BRAKE ARM	1	
130	VXL3113	T BRAKE ARM	1	
130-1	VMB3548	T BRAKE SPRING	1	
131	VXL3124	CHANGING LEVER U	1	
132	VXP2133-2	CENTER CLUTH U	1	
133	VXP2168	TORQUE CLUTCH	1	
134	VMA0L25	TOP PLATE	1	
135	VMD4255	SIDE PLATE L	1	
136	VMD4254	SIDE PLATE R	1	
137	VXA7110	CASSETTE HOLDER UNIT	1	
138	VXL3160	MAIN SHAFT	1	
139	VXA7311	SECTOR GEAR	1	
141	VML3706	OPENER LEVER	1	
142	VHD1044	A/C SET SCREW	1	
143	XYN3+C4FJ	SCREW	1	
144	XTN26+7JFJ	SCREW	3	
145	XTV26+5FFJ	SCREW	2	
146	XTV26+8FFJ	SCREW	2	
147	VHD1095	SCREW	1	
148	VHD1117	SCREW	2	
149	VMX2208	WASHER	1	
150	VMX3114	WASHER	1	
151	VMX2699	WASHER	1	
152	VMX3196	WASHER	1	
A1	EUR7720KY0	REMOTE CONTROL ASS'Y	1	
A1-1	UR77EC2003A	BATTERY COVER	1	
A2	K2CB2CB00006	AC CORD	1	⚠
A3	K2KA6CA00001	AV CORD	1	
A4	K2KZ2BA00001	RF COAXIAL CABLE	1	
A5	VPK2737	ACCESSORY BOX	1	
A6	VQT0N93	OPERATING INSTRUCTIONS	1	<IA>(PC) ⚠
A6	VQT0N92	OPERATING INSTRUCTIONS	1	<IB> ⚠
A7	RPFX0042-1	VINYL BAG(F.B.)	1	
A8	VQT0Q97	EASY GUIDE LEAFLET	1	(P)
PC1	RPG7559	PACKING CASE	1	(P)
PC1	RPG7552	PACKING CASE	1	(P) <SPC> <J>
PC1	RPG7553	PACKING CASE	1	(PC)
PC2	RPN1797	CUSHION	1	
PC4	VPF0505	POLYETHYLENE BAG(UNIT)	1	(P) <SPC> <J>
PC4	VPF1122	POLYETHYLENE BAG	1	
n	03	VEP06F98AT		(MAIN P.C.B.)
B7751	N4BCT50A0005	BATTERY (LEAD FREE)	1	
C2001	ECJ1VC1H330J	50V 33P	1	
C2003	ECJ1VF1A105Z	10V 1U	1	
C2051	ECEA0JKN220B	6.3V 22U	1	
C2053	ECEA1CKS100B	16V 10U	1	
C2054	F1H1H392A013	50V 3900	1	
C2055	F1H1C104A008	16V 0.1U	1	
C2099	ECJ1VC1H681J	50V 680P	1	
C2501	F1H1C104A008	16V 0.1U	1	
C2502	ECEA0JKA221B	6.3V 220U	1	
C2504,05	F1H1E223A002	25V 0.022U	2	
C2506	ECJ1VB1A224K	10V 0.22U	1	
C2507	F1H1H102A219	50V 1000P	1	
C2508	F1H1H182A219	50V 1800P	1	
C2509	ECEA1CKA220B	16V 22U	1	
C2510-12	F1H1C104A041	16V 0.1U	3	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C2513	ECJ1VF1A105Z	10V 1U	1	
C2515	F1H1H103A220	50V 0.01U	1	
C2518,19	F1H1H103A220	50V 0.01U	2	
C2551,52	ECJ1VB1C563K	16V 0.056U	2	
C2561,62	ECJ1VB1C563K	16V 0.056U	2	
C2571	ECA1VM221B	35V 220U	1	
C3001	ECJ1VC1H151J	50V 150P	1	
C3002,03	F1H1C104A041	16V 0.1U	2	
C3005	F1H1H220A230	50V 22P	1	
C3006	F1H1C104A041	16V 0.1U	1	
C3007	ECJ1VB0J105K	6.3V 1U	1	
C3008	F2A1H4R7A234	50V 4.7U	1	
C3009,10	ECJ1VB0J105K	6.3V 1U	2	
C3011	F1H1C104A041	16V 0.1U	1	
C3012	F2A0J470A245	6.3V 47U	1	
C3014	F1H1C104A041	16V 0.1U	1	
C3015	ECJ1VB0J105K	6.3V 1U	1	
C3017	F1H1C104A041	16V 0.1U	1	
C3019	F1H1C104A041	16V 0.1U	1	
C3020	F2A1H3R3A234	50V 3.3U	1	
C3021	F2A1V100A184	35V 10U	1	
C3023	F1H1H103A219	50V 0.01U	1	
C3024	ECJ1VC1H331J	50V 330	1	
C3025	F1H1H103A220	50V 0.01U	1	
C3028	F2A1H4R7A234	50V 4.7U	1	
C3029	F2A1HR47A234	50V 47U	1	
C3030	F1H1E223A002	25V 0.022U	1	
C3031	F1H1C3330001	16V 0.033U	1	
C3032	F2A1H4R7A234	50V 4.7U	1	
C3033	F1H1C104A041	16V 0.1U	1	
C3034	F2A1H2R2A234	50V 2.2U	1	
C3035	ECJ1VB1H472K	50V 4700P	1	
C3036	F2A0J470A245	6.3V 47U	1	
C3037	F1H1C104A041	16V 0.1U	1	
C3038	ECJ1VC1H040C	50V 40P	1	
C3039	F2A1H1R0A234	50V 1U	1	
C3040,41	F1H1H103A220	50V 0.01U	2	
C3043	F1J0J106A014	6.3V 10U	1	
C3044	F1H1C104A041	16V 0.1U	1	
C3048	F1H1H103A219	50V 0.01U	1	
C3050	F1H1C104A041	16V 0.1U	1	
C3051	ECJ1VB0J105K	6.3V 1U	1	
C3052	F2A1A470A388	10V 47U	1	
C3053	F1H1C104A041	16V 0.1U	1	
C3074	F1H1C104A041	16V 0.1U	1	
C3080	F1H1H103A219	50V 0.01U	1	
C3701	F2A0J470A013	6.3V 47U	1	
C3702	F1H1H103A219	50V 0.01U	1	
C3703	F1H1C104A008	16V 0.1U	1	
C3704	ECEA1CKA100B	16V 10U	1	
C3705,06	F1H1C104A008	16V 0.1U	2	
C3707	ECEA0JKA220B	6.3V 22U	1	
C3708	F1H1C3330001	16V 0.033U	1	
C3709	F2A0J470A013	6.3V 47U	1	
C3710-12	F1H1C104A041	16V 0.1U	3	
C3713	F1H1H103A220	50V 0.01U	1	
C3715	F1H1H103A220	50V 0.01U	1	
C3716-22	F1H1H103A219	50V 0.01U	7	
C3723,24	F1H1H103A220	50V 0.01U	2	
C3726	ECA0JM471B	6.3V 470U	1	
C3727	F2A0J470A013	6.3V 47U	1	
C3728	ECA0JM331B	6.3V 330U	1	
C3729	ECJ1VB0J105K	6.3V 1U	1	
C3730	ECA0JM331B	6.3V 330U	1	
C3731	ECJ1VB0J105K	6.3V 1U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C3732	F2A0J470A013	6.3V 47U	1	
C3733	ECA0JM471B	6.3V 470U	1	
C3734	F2A0J470A013	6.3V 47U	1	
C3735	ECA0JM471B	6.3V 470U	1	
C3736	F1H1H103A219	50V 0.01U	1	
C3737,38	F1H1H103A220	50V 0.01U	2	
C3743,44	F1H1H103A220	50V 0.01U	2	
C3745	F1H1C104A041	16V 0.1U	1	
C3908	F1H1H103A220	50V 0.01U	1	
C3918	F1H1C104A008	16V 0.1U	1	
C3919	F1H1H103A220	50V 0.01U	1	
C3925,26	ECJ1VB0J105K	6.3V 1U	2	
C3927	F1H1C104A041	16V 0.1U	1	
C3928	F2A0J101A245	6.3V 100U	1	
C3932	F1H1H103A220	50V 0.01U	1	
C3933	F2A0J471A247	6.3V 470U	1	
C4001	ECQB1H223JF3	50V 0.023U	1	
C4004	F1H1H182A219	50V 1800P	1	
C4005	ECEA0JKA220B	6.3V 22U	1	
C4006	ECEA1HKA4R7B	50V 4.7U	1	
C4007	F1H1H182A219	50V 1800P	1	
C4008	ECEA1HKA3R3B	50V 3U	1	
C4009	ECEA0JKA330B	6.3V 33U	1	
C4011	F1H1H103A219	50V 0.01U	1	
C4012	ECEA1HKA4R7B	50V 4.7U	1	
C4013	F1H1H103A220	50V 0.01U	1	
C4017	F2A1C1000018	16V 10U	1	
C4019	F2A1C1000018	16V 10U	1	
C4081	ECJ1VB1C683K	16V 0.068U	1	
C4082	F1H1H471A219	50V 470P	1	
C4083	F2A0J470A013	6.3V 47U	1	
C4084	F1H1H182A219	50V 1800P	1	
C4501	ECQB1H473JF3	50V 0.047U	1	
C4502-04	F2A1C1000018	16V 10U	3	
C4505	ECEA0JKA330B	6.3V 33U	1	
C4506	F2A1C1000018	16V 10U	1	
C4507	ECEA0JKA220B	6.3V 22U	1	
C4508	F1H1C3330001	16V 0.033U	1	
C4509,10	F1H1H103A220	50V 0.01U	2	
C4511	F1H1C104A041	16V 0.1U	1	
C4512	ECJ1VB1A224K	10V 0.22U	1	
C4513	ECEA0JKA220B	6.3V 22U	1	
C4514	F2A1C1000018	16V 10U	1	
C4515	ECEA0JKA330B	6.3V 33U	1	
C4516	F2A1C1000018	16V 10U	1	
C4517	ECEA0JKA220B	6.3V 22U	1	
C4518	F1H1H103A220	50V 0.01U	1	
C4519	F1H1C104A008	16V 0.1U	1	
C4520	ECEA0JKA220B	6.3V 22U	1	
C4521	F2A1C1000018	16V 10U	1	
C4522	ECQB1H473JF3	50V 0.047U	1	
C4523	ECEA0JKA220B	6.3V 22U	1	
C4524	F1H1C104A041	16V 0.1U	1	
C4525	ECEA1CKA220B	16V 22U	1	
C4526	F2A1C1000018	16V 10U	1	
C4534,35	ECQB1H153JF3	50V 0.015U	2	
C4537	ECJ2VC1H560G	50V 56P	1	
C4538	F1H1H103A220	50V 0.01U	1	
C4773,74	ERJ3GEYJ682V	1/10W 6.8K	2	
C4801,02	ECJ1VC1H102J	50V 1000P	2	
C4803-06	F2A1C1000018	16V 10U	4	
C4807	ECA1AAK470XB	10V 47U	1	
C4808	F1H1H103A220	50V 0.01U	1	
C4809,10	F2A1C1000018	16V 10U	2	
C4811	F2A1H4R7A234	50V 4.7U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C4812,13	F2A1V100A184	35V 10U	2	
C4816-18	F2A1H1R0A236	50V 1U	3	
C4819	F2A1C221A019	16V 220U	1	
C4820	F2A1H1R0A236	50V 1U	1	
C4821	ECJ1VC1H820J	50V 82P	1	
C4822	F1H1C104A008	16V 0.1U	1	
C4823	F1H1H103A219	50V 0.01U	1	
C4828	ECJ1VC1H820J	50V 82P	1	
C4829,30	F2A1C1000018	16V 10U	2	
C4831	F1H1C104A008	16V 0.1U	1	
C4832	F2A0J470A599	6.3V 47U	1	
C4833	ECQV1H104JL3	50V 0.1U	1	
C4834,35	F1H1C104A008	16V 0.1U	2	
C4836	F2A1H1R0A236	50V 1U	1	
C4837,38	F2A1C471A236	16V 470U	2	
C4839,40	F2A1H1R0A236	50V 1U	2	
C4841	F1H1C104A008	16V 0.1U	1	
C4842-44	F2A1H1R0A236	50V 1U	3	
C5001-04	F1H1H103A219	50V 0.01U	4	
C5005	F1H1C104A041	16V 0.1U	1	
C5006	F2A0J101A245	6.3V 100U	1	
C5007	F1H1C104A008	16V 0.1U	1	
C5008	ECJ1VB0J105K	6.3V 1U	1	
C6001	ECJ1VC1H180J	50V 18P	1	
C6002	F1H1H220A230	50V 22P	1	
C6003	ECJ1VC1H180J	50V 18P	1	
C6004	F1H1H220A230	50V 22P	1	
C6005	ECEA1HKA3R3B	50V 3U	1	
C6006	F1H1H101A230	50V 100P	1	
C6007	F1H1H820A230	50V 82P	1	
C6008	ECJ1VC1H471J	50V 470P	1	
C6009	F1H1H103A220	50V 0.01U	1	
C6010,11	ECJ1VC1H120J	50V 12P	2	
C6012	F1H1C104A008	16V 0.1U	1	
C6014	F1H1H102A219	50V 1000P	1	
C6015	F1H1C3330001	16V 0.033U	1	
C6016	F1H1H102A219	50V 1000P	1	
C6018	F1H1H103A220	50V 0.01U	1	
C6019	F1J1H104A578	50V 0.1P	1	
C6020	F1H1H102A219	50V 1000P	1	
C6101	F1H1H103A220	50V 0.01U	1	
C6102	ECJ1VF1A105Z	10V 1U	1	
C6103	ECJ1VC1H561J	50V 560P	1	
C6104	F1H1H103A220	50V 0.01U	1	
C6302	F1H1H103A220	50V 0.01U	1	
C6303	F2A0J470A013	6.3V 47U	1	
C6304	ECJ1VB1A105K	10V 1U	1	
C6308	F2A0J470A013	6.3V 47U	1	
C7301	ECEA1HKA2R2B	50V 2.2U	1	
C7302	F1H1C3330001	16V 0.033U	1	
C7303	F1H1C104A041	16V 0.1U	1	
C7304	F1H1E223A002	25V 0.022U	1	
C7305	F1H1C104A041	16V 0.1U	1	
C7306	ECEA1HKA3R3B	50V 3U	1	
C7307	ECEA1HKAR33B	50V 33U	1	
C7308	F2A1C1000018	16V 10U	1	
C7309	ECJ1VF1C334Z	16V 0.33U	1	
C7310	F1H1C104A041	16V 0.1U	1	
C7311	ECJ1VB1A224K	10V 0.22U	1	
C7312	F1H1H102A219	50V 1000P	1	
C7313	ECEA1HKA4R7B	50V 4.7U	1	
C7314,15	ECEA1HKA2R2B	50V 2.2U	2	
C7316,17	F1H1E223A002	25V 0.022U	2	
C7318	ECEA1HKA2R2B	50V 2.2U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C7319	F2A0J470A245	6.3V 47U	1	
C7320	F1H1H103A220	50V 0.01U	1	
C7321,22	F2A1C1000018	16V 10U	2	
C7401	ECEA1HKA010B	50V 1U	1	
C7403	F1H1C104A041	16V 0.1U	1	
C7404	F2A0J470A013	6.3V 47U	1	
C7405	ECJ1VB0J105K	6.3V 1U	1	
C7406	F1H1C104A008	16V 0.1U	1	
C7408	ECJ2FB1A105K	10V 1U	1	
C7421	F2A0J470A013	6.3V 47U	1	
C7422	F1H1H103A220	50V 0.01U	1	
C7432,33	ECJ1VB1H103K	50V 0.01U	2	
C7435,36	ECJ1VC1H220J	50V 22P	2	
C7752	ECA0JM471B	6.3V 470U	1	
C7901	F1H1H103A220	50V 0.01U	1	
C7902	ECEA1HKA100B	50V 10U	1	
C7903	ECJ1VF1H104Z	50V 0.1U	1	
C7904	F1H1C104A041	16V 0.1U	1	
C7905	F2A1C221A019	16V 220U	1	
C7906	ECQB1H473JF3	50V 0.047U	1	
C7907	F2A1A1010072	10V 100U	1	
C7908	ECQB1H103JF3	50V 0.01U	1	
C7909,10	F2A1H5600009	50V 56U	2	
C7911	F1H1H103A220	50V 0.01U	1	
D1501	B3EA00000072	LED	1	
D2001,02	MA2C165001VT	DIODE	2	
D2502	MAZ4160NMF	DIODE	1	
D4501	MA2C165001VT	DIODE	1	
D4502	MAZ4056NHF	DIODE	1	
D6306	MAZ4056NHF	DIODE	1	
D7401	MAZ4300NMF	DIODE	1	
D7751	MA2C165001VT	DIODE	1	
D7752	MA2C700A0F	DIODE	1	
D7753,54	MA2C165001VT	DIODE	2	
D7901	MAZ4220NMF	DIODE	1	
D7902	B0AAGM000007	DIODE	1	
D7903	B0JAME000025	DIODE	1	⚠
D7904,05	MA2C18500E	DIODE	2	
D7906	MAZ4300NMF	DIODE	1	
FL7301	EFCT4R5MS5W	FILTER	1	
IC1511,12	B3NAA0000049	IC	2	
IC2501	C1AB00001767	IC	1	
IC3001	C1AB00002083	IC	1	
IC3002	C0CBCYG00004	IC	1	
IC3701	C1AB00001918	IC	1	
IC3703	C1AB00001340	IC	1	
IC3902	C1AB00001935	IC	1	
IC4501	AN3656NFBPBV	IC	1	
IC4801	C0JBAR000438	IC	1	
IC4802	C0ABBB000119	IC	1	
IC4803	C0CBCDC00027	IC	1	
IC4804	C1AB00001920	IC	1	
IC6001	C2CBJG000492	IC	1	
IC6201	C0EBH0000172	IC	1	
IC6301	C0CBCDC00020	IC	1	
IC7301	AN5832SA-E1V	IC	1	
IC7401	C0BBBB000024	IC	1	
IC7402	C0CBCDD00006	IC	1	
J1	VEE0U97	EARTH WIRE	1	
JK3902	K1U717B00006	JACK,AV OUT	1	
JK3903	K1U412B00004	JACK,AV IN1	1	
JK4801	K1U407B00004	JACK,DVD OUT	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
K3006	ERJ3GEY0R00V	1/10W 0	1	
K3008	ERJ3GEY0R00V	1/10W 0	1	
K3010	ERJ3GEY0R00V	1/10W 0	1	
K3016	ERJ3GEY0R00V	1/10W 0	1	
K3022	ERJ3GEY0R00V	1/10W 0	1	
K3902,03	ERJ3GEY0R00V	1/10W 0	2	
K4506	ERJ3GEY0R00V	1/10W 0	1	
K6001,02	ERJ3GEY0R00V	1/10W 0	2	
K6004	ERJ3GEY0R00V	1/10W 0	1	
K6101	ERJ3GEY0R00V	1/10W 0	1	
L3002	G0C271JA0019	COIL	1	
L3003	G0C270JA0019	COIL 27UH	1	
L3004	G0C680JA0019	COIL	1	
L3005	G0C270JA0019	COIL 27UH	1	
L3006	G1C120JA0036	COIL	1	
L3701,02	G0C220JA0019	COIL 22UH	2	
L4061	G0C221KA0065	COIL	1	
L4501	G0C1R2J00004	COIL 1.2UH	1	
L4502	G0C391JA0019	COIL	1	
L4503	G0C101JA0019	COIL 100UH	1	
L5001	G0C680JA0019	COIL	1	
L6001	G0C5R6JA0019	COIL	1	
L6102	G0C1R5JA0019	COIL	1	
L7901	G0A101EA0017	COIL	1	
L7902	G0C220JA0019	COIL 22UH	1	
LB3101-08	J0JCC0000103	COIL	8	
LB3110,11	J0JCC0000103	COIL	2	
LB4101-05	J0JCC0000103	COIL	5	
LB4107	J0JCC0000103	COIL	1	
LB7403	ERJ3GEY0R00V	1/10W 0	1	
LB7405	ERJ3GEY0R00V	1/10W 0	1	
LB7407	ERJ3GEY0R00V	1/10W 0	1	
LB7408-12	J0JBC0000015	COIL	5	
LB7901	J0JKB0000028	COIL	1	
P1531	K1KA02A00375	CONNECTOR(2P)	1	
P2501	K1MN07A00020	CONNECTOR(7P)	1	
P2571	K1KA08A00290	CONNECTOR(8P)	1	
P3001	K1MN09A00029	CONNECTOR(9P)	1	
P4001	K1MZ02A00003	CONNECTOR(2P)	1	
P4002	K1MN06A00034	CONNECTOR(6P)	1	
P6001	K1KB13AA0032	CONNECTOR(13P)	1	
P6002,03	K1KB19AA0032	CONNECTOR(19P)	2	
P6005	K1KB07AA0032	CONNECTOR(7P)	1	
PS6001	K1KB08B00043	CONNECTOR(8P)	1	
PS6002	K1KB12B00040	CONNECTOR(FEMALE) 12P	1	
Q1501,02	PNB2302MF	TRANSISTOR	2	
Q3001	2SD1819A0L	TRANSISTOR	1	
Q3004	2SD1819A0L	TRANSISTOR	1	
Q3901	XN0460100L	TRANSISTOR	1	
Q4001	2SD114900L	TRANSISTOR	1	
Q4002	2SD1819A0L	TRANSISTOR	1	
Q4081	B1AAGD000016	TRANSISTOR	1	
Q4084	2SB0710A0L	TRANSISTOR	1	
Q4501	2SB0710A0L	TRANSISTOR	1	
Q4502	B1AAGD000016	TRANSISTOR	1	
Q6305	2SD0601A0L	TRANSISTOR	1	
Q6801	2SD1819A0L	TRANSISTOR	1	
Q7401	2SB1218A0L	TRANSISTOR	1	
Q7402	2SD1819A0L	TRANSISTOR	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
Q7901	2SD21770SA	TRANSISTOR	1	
Q7902	2SD1819A0L	TRANSISTOR	1	
Q7903	2SD132800L	TRANSISTOR	1	
QR4001	UNR511100L	TRANSISTOR	1	
QR4082	UNR521300L	TRANSISTOR	1	
QR4501	UNR521100L	TRANSISTOR	1	
QR4802	UNR521600L	TRANSISTOR	1	
QR4804	UNR511100L	TRANSISTOR	1	
QR4805, 06	UNR521600L	TRANSISTOR	2	
QR4807	UNR511300L	TRANSISTOR	1	
QR4808, 09	UNR521600L	TRANSISTOR	2	
QR4810	UNR521300L	TRANSISTOR	1	
QR4811, 12	UNR521500L	TRANSISTOR	2	
QR4813	UNR511300L	TRANSISTOR	1	
QR4816	UNR521600L	TRANSISTOR	1	
QR6801	UNR511300L	TRANSISTOR	1	
QR7401	UNR511200L	TRANSISTOR	1	
QR7901	UNR511100L	TRANSISTOR	1	
R1501,02	D0GB273JA007	1/10W 27K	2	
R1503	ERDS2TJ151T	1/4W 150	1	
R1511,12	D0GB273JA007	1/10W 27K	2	
R1513	ERJ6GEYJ121V	1/8W 120	1	
R2001	D0GB392JA041	1/10W 3.9K	1	
R2002	D0GB105JA007	1/10W 1M	1	
R2099	ERJ3GEYJ682V	1/10W 6.8K	1	
R2501	ERJ6GEYJ1R2V	1/8W 1.2	1	
R2502	ERJ6GEYJ1R5V	1/8W 1.5	1	
R2503	ERDS2TJ182T	1/4W 1.8K	1	
R2514-16	D0GB221JA041	1/10W 220	3	
R2520	D0GB183JA007	1/10W 18K	1	
R2521	ERJ3GEYJ102V	1/10W 1K	1	
R2551,52	ERJ3GEYJ103V	1/10W 10K	2	
R2561	ERJ3GEYJ102V	1/10W 1K	1	
R2562	D0GB473JA041	1/10W 47K	1	
R2563	ERJ3GEYJ102V	1/10W 1K	1	
R2564,65	D0GB101JA007	1/10W 100	2	
R3001	D0GB152JA007	1/10W 1.5K	1	
R3002	ERJ3GEYJ622V	1/10W 6.2K	1	
R3009	D0GB153JA007	1/10W 15K	1	
R3013	ERJ3GEYJ103V	1/10W 10K	1	
R3014	ERJ3GEYJ102V	1/10W 1K	1	
R3017	ERJ3GEYJ102V	1/10W 1K	1	
R3019	ERJ3GEYF182V	1/10W 1.8K	1	
R3021	D0GB222JA041	1/10W 2.2K	1	
R3022	D0GB332JA007	1/10W 3.3K	1	
R3023	D0GB152JA007	1/10W 1.5K	1	
R3024	ERJ3GEYF202V	1/10W 2K	1	
R3030	ERJ3GEYJ685V	1/10W 6.8M	1	
R3031	D0GB331JA007	1/10W 330	1	
R3032	D0GB392JA041	1/10W 3.9K	1	
R3035	D0GB222JA041	1/10W 2.2K	1	
R3037	D0GB473JA041	1/10W 47K	1	
R3052,53	D0GB222JA041	1/10W 2.2K	2	
R3701	ERJ3RBD104V	1/16W 100K	1	
R3702	ERJ3RBD153V	1/16W 15K	1	
R3703,04	D0GB221JA041	1/10W 220	2	
R3705	ERJ3GEY0R00V	1/10W 0	1	
R3706	D0GB330JA007	1/10W 33	1	
R3707	D0GB105JA007	1/10W 1M	1	
R3708	ERJ3GEYJ750V	1/10W 75	1	
R3710,11	ERJ3GEYJ103V	1/10W 10K	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R3907-09	ERJ3GEYF750V	1/10W 75	3	
R3912	ERJ3GEYF750V	1/10W 75	1	
R3913	ERJ3GEYJ680V	1/10W 68	1	
R3914,15	ERJ3GEYF750V	1/10W 75	2	
R3924	ERJ3GEYJ750V	1/10W 75	1	
R3926	ERJ3GEYJ102V	1/10W 1K	1	
R3928,29	ERJ3GEYJ750V	1/10W 75	2	
R3932,33	ERJ3GEYJ561V	1/10W 560	2	
R3936	ERJ3GEYJ102V	1/10W 1K	1	
R3937-40	D0GB471JA041	1/10W 470	4	
R4001	ERJ3GEYJ102V	1/10W 1K	1	
R4003	D0GB153JA007	1/10W 15K	1	
R4004	D0GB271JA007	1/10W 270	1	
R4005	ERJ3GEYJ102V	1/10W 1K	1	
R4006	D0GB153JA007	1/10W 15K	1	
R4007	ERJ3GEYJ103V	1/10W 10K	1	
R4008	D0GB334JA041	1/10W 330K	1	
R4009	D0GB2R2JA007	1/10W 2.2	1	
R4011	D0GB153JA007	1/10W 15K	1	
R4012	D0GB223JA041	1/10W 22K	1	
R4081	ERJ3GEYJ682V	1/10W 6.8K	1	
R4082	D0GB332JA007	1/10W 3.3K	1	
R4086,87	D0GB222JA041	1/10W 2.2K	2	
R4500	ERJ3GEYJ102V	1/10W 1K	1	
R4501	D0GB563JA007	1/10W 56K	1	
R4502,03	D0GB473JA041	1/10W 47K	2	
R4504	ERDS2TJ821T	1/4W 820	1	
R4505,06	ERJ3GEYJ622V	1/10W 6.2K	2	
R4507,08	D0GB472JA041	1/10W 4.7K	2	
R4509	D0GB473JA041	1/10W 47K	1	
R4510	ERJ3GEYJ622V	1/10W 6.2K	1	
R4511	D0GB473JA041	1/10W 47K	1	
R4512	ERJ3GEYJ622V	1/10W 6.2K	1	
R4513	D0GB472JA041	1/10W 4.7K	1	
R4515	D0GB563JA007	1/10W 56K	1	
R4518,19	ERJ3GEYJ753V	1/10W 75K	2	
R4520	D0GB472JA041	1/10W 4.7K	1	
R4521,22	ERJ3GEYJ511V	1/10W 510	2	
R4525	ERJ3GEYJ102V	1/10W 1K	1	
R4526	D0GB243JA007	1/10W 24K	1	
R4527	ERJ3GEYJ682V	1/10W 6.8K	1	
R4529	ERJ3GEYJ681V	1/10W 680	1	
R4534	D0GB124JA007	1/10W 120K	1	
R4538	D0GB393JA041	1/10W 390K	1	
R4539,40	ERJ3GEYJ102V	1/10W 1K	2	
R4553	ERJ3GEYJ103V	1/10W 10K	1	
R4557	ERJ3GEYJ103V	1/10W 10K	1	
R4801-04	ERJ3GEYJ681V	1/10W 680	4	
R4805	D0GB222JA041	1/10W 2.2K	1	
R4806,07	D0GB471JA041	1/10W 470	2	
R4808,09	D0GB104JA007	1/10W 100K	2	
R4810-13	ERJ3GEYJ102V	1/10W 1K	4	
R4814	D0GB473JA041	1/10W 47K	1	
R4815,16	ERJ3GEYJ102V	1/10W 1K	2	
R4817,18	D0GB101JA007	1/10W 100	2	
R4819	D0GB335JA040	1/10W 3.3M	1	
R4820,21	ERJ3GEYJ103V	1/10W 10K	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R4824,25	ERJ3GEYJ102V	1/10W 1K	2	
R4826,27	D0HB123ZA002	1/16W 12K	2	
R4829,30	D0HB123ZA002	1/16W 12K	2	
R4832,33	D0GB473JA041	1/10W 47K	2	
R4834,35	ERJ3GEYJ102V	1/10W 1K	2	
R4836,37	ERJ3GEY0R00V	1/10W 0	2	
R4855,56	D0GB104JA007	1/10W 100K	2	
R4858	D0GB221JA041	1/10W 220	1	
R4859	D0GB471JA041	1/10W 470	1	
R4860	D0GB221JA041	1/10W 220	1	
R4861	D0GB471JA041	1/10W 470	1	
R4862,63	D0GB104JA007	1/10W 100K	2	
R6001,02	ERJ3GEYJ102V	1/10W 1K	2	
R6003	D0GB223JA041	1/10W 22K	1	
R6004	ERJ3GEYJ103V	1/10W 10K	1	
R6006,07	D0GB183JA007	1/10W 18K	2	
R6008	D0GB222JA041	1/10W 2.2K	1	
R6009,10	ERJ3GEYJ103V	1/10W 10K	2	
R6011	D0GB183JA007	1/10W 18K	1	
R6012,13	D0GB221JA041	1/10W 220	2	
R6015,16	D0GB101JA007	1/10W 100	2	
R6017	D0GB222JA041	1/10W 2.2K	1	
R6018	D0GB101JA007	1/10W 100	1	
R6019	ERJ3GEYJ103V	1/10W 10K	1	
R6020	D0GB221JA041	1/10W 220	1	
R6022-24	D0GB221JA041	1/10W 220	3	
R6026-28	ERJ3GEYJ103V	1/10W 10K	3	
R6029	D0GB221JA041	1/10W 220	1	
R6101	D0GB105JA007	1/10W 1M	1	
R6102	D0GB471JA041	1/10W 470	1	
R6103	D0GB181JA007	1/10W 180	1	
R6201	D0GB332JA007	1/10W 3.3K	1	
R6309	D0GB272JA041	1/10W 2.7K	1	
R6801	D0GB104JA007	1/10W 100K	1	
R6802	ERJ3GEY0R00V	1/10W 0	1	
R6803	D0GB474JA041	1/10W 470K	1	
R7301	ERJ3GEYJ103V	1/10W 10K	1	
R7303	D0GB332JA007	1/10W 3.3K	1	
R7304	ERJ3GEY0R00V	1/10W 0	1	
R7305,06	ERJ6GEYJ331V	1/8W 330	2	
R7307	D0GB184JA007	1/10W 180K	1	
R7308,09	D0GB331JA007	1/10W 330	2	
R7310	ERJ3GEY0R00V	1/10W 0	1	
R7311	ERJ3GEYJ102V	1/10W 1K	1	
R7401	ERDS2TJ102T	1/4W 1K	1	
R7402	ERJ3GEY0R00V	1/10W 0	1	
R7403	D0GB222JA041	1/10W 2.2K	1	
R7405	ERJ3GEYJ102V	1/10W 1K	1	
R7406	D0GB153JA007	1/10W 15K	1	
R7407	ERJ3GEYJ133V	1/10W 13K	1	
R7408	D0GB222JA041	1/10W 2.2K	1	
R7410,11	ERJ6GEY0R00V	1/8W 0	2	
R7415	ERJ3GEYJ681V	1/10W 680	1	
R7416	D0GB104JA007	1/10W 100K	1	
R7417,18	D0GB472JA041	1/10W 4.7K	2	
R7751	ERJ3GEYJ102V	1/10W 1K	1	
R7901	ERDS2TJ561T	1/4W 560	1	
R7902	ERDS2TJ333T	1/4W 33K	1	
R7903,04	D0GB472JA041	1/10W 4.7K	2	
R7905,06	D0GB223JA041	1/10W 22K	2	
R7907	D0AE101JA048	100	1	
R7909	D0GB393JA041	1/10W 390K	1	
R7910	ERJ3GEYJ103V	1/10W 10K	1	
S1531	K0C111A00006	SWITCH,SAFETY TAB	1	
S1532	K0ZZ00000598	SWITCH,MODE	1	
T4081	EQQ7QF027Q	TRANSFORMER	1	⚠
T7901	ETS13TB159AP	TRANSFORMER	1	⚠
TU7401	ENG56D08G1F	TUNER	1	
W701-17	ERJ3GEY0R00V	1/10W 0	17	
W718-20	ERJ6GEY0R00V	1/8W 0	3	
W721	ERJ3GEY0R00V	1/10W 0	1	
W722	ERJ6GEY0R00V	1/8W 0	1	
W723-26	ERJ3GEY0R00V	1/10W 0	4	
W727	ERJ6GEY0R00V	1/8W 0	1	
W728,29	ERJ3GEY0R00V	1/10W 0	2	
W730-33	ERJ6GEY0R00V	1/8W 0	4	
W734-37	ERJ3GEY0R00V	1/10W 0	4	
W738	ERJ6GEY0R00V	1/8W 0	1	
W739	ERJ3GEY0R00V	1/10W 0	1	
W740	ERJ6GEY0R00V	1/8W 0	1	
W741,42	ERJ3GEY0R00V	1/10W 0	2	
W743	ERJ6GEY0R00V	1/8W 0	1	
W744-48	ERJ3GEY0R00V	1/10W 0	5	
W749	ERJ6GEY0R00V	1/8W 0	1	
W751	ERJ3GEY0R00V	1/10W 0	1	
W756	ERJ6GEY0R00V	1/8W 0	1	
W757	ERJ3GEY0R00V	1/10W 0	1	
W765	ERJ6GEY0R00V	1/8W 0	1	
W785,86	ERJ3GEY0R00V	1/10W 0	2	
W787	ERJ6GEY0R00V	1/8W 0	1	
W788-90	ERJ3GEY0R00V	1/10W 0	3	
W792	ERJ6GEY0R00V	1/8W 0	1	
W793	ERJ3GEY0R00V	1/10W 0	1	
X3002	H0D357400067	OSCILLATOR	1	
X6001	H0D120500009	OSCILLATOR	1	
X6002	H0A327200098	CRYSTAL OSCILLATOR	1	
n	04	VEP04885B		(FRONT JACK P.C.B.)
C3801	ERJ3GEY0R00V	1/10W 0	1	
C3802	F1H1C104A008	16V 0.1U	1	
C4303,04	F1H1H101A230	50V 100P	2	
C4305,06	F1H1H102A219	50V 1000P	2	
C7801	F1H1C104A008	16V 0.1U	1	
IC7801	PNA4618M13VT	IC	1	
JK3802	K1CB106A0012	JACK,S-VIDEO IN	1	
JK4600	K2HA307A0009	JACK,AV IN2	1	
LB3301-03	J0JCC0000103	COIL	3	
PP4600	K1KA12B00129	CONNECTOR(12P)	1	
R3801-03	ERJ3GEYJ750V	1/10W 75	3	
R3804	ERJ3GEYJ102V	1/10W 1K	1	
R4305,06	J0JCC0000103	COIL	2	
R7801	D0GB221JA041	1/10W 220	1	
R7802	D0GB182JA007	1/10W 1.8K	1	
R7803	D0GB332JA007	1/10W 3.3K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R7806	D0GB472JA041	1/10W 4.7K	1	
R7807	D0GB182JA007	1/10W 1.8K	1	
R7808	D0GB332JA007	1/10W 3.3K	1	
R7809	D0GB472JA041	1/10W 4.7K	1	
R7810	ERJ3GEYJ682V	1/10W 6.8K	1	
S7801	EVQ11G07K	SWITCH,CH UP	1	
S7802	EVQ11G07K	SWITCH,STOP	1	
S7805	EVQ11G07K	SWITCH,FF	1	
S7806	EVQ11G07K	SWITCH,POWER	1	
S7808	EVQ11G07K	SWITCH,REC	1	
S7809	EVQ11G07K	SWITCH,PLAY	1	
S7810	EVQ11G07K	SWITCH,CH DOWN	1	
S7812	EVQ11G07K	SWITCH,REW	1	
S7813	EVQ11G07K	SWITCH,EJECT	1	
n	05	VEP07A78B		(FL DRIVE P.C.B.)
C7501	F1H1C104A008	16V 0.1U	1	
C7502	F2A0J470A013	6.3V 47U	1	
C7525	F1H1H101A230	50V 100P	1	
D7501	B3AAA0000752	DIODE	1	
D7503	B3ACA0000273	DIODE	1	
D7505	B3ADA0000173	DIODE	1	
DP7501	A2BB00000145	FIP DISPLAY	1	
IC7502	C0HBB0000048	IC	1	
K7504,05	ERJ3GEY0R00V	1/10W 0	2	
K7508-11	ERJ3GEY0R00V	1/10W 0	4	
K7515,16	ERJ3GEY0R00V	1/10W 0	2	
PP7501	K1KA10B00176	CONNECTOR(10P)	1	
PP7503	K1KA08B00210	CONNECTOR(8P)	1	
Q7501	2SD1819A0L	TRANSISTOR	1	
QR7501	UNR521100L	TRANSISTOR	1	
QR7503	UNR521100L	TRANSISTOR	1	
QR7505	UNR521100L	TRANSISTOR	1	
R7501	D0GB271JA007	1/10W 270	1	
R7503	D0GB391JA041	1/10W 390K	1	
R7505	D0GB391JA041	1/10W 390K	1	
R7508,09	ERJ3GEYJ122V	1/10W 1.2K	2	
R7510	ERDS2TJ5R6T	1/4W 5.6	1	
R7511	D0GB152JA007	1/10W 1.5K	1	
R7512	ERJ3GEYJ103V	1/10W 10K	1	
R7513	D0GB683JA007	1/10W 68K	1	
R7514	ERJ3GEY0R00V	1/10W 0	1	
R7515	D0GB101JA007	1/10W 100	1	
R7516	D0GB152JA007	1/10W 1.5K	1	
R7517	D0GB222JA041	1/10W 2.2K	1	
R7525	D0GB273JA007	1/10W 27K	1	
R7526,27	D0GB101JA007	1/10W 100	2	
S7501	EVQ11G04M	SWITCH,OPEN/CLOSE	1	
S7502	EVQ11G07K	SWITCH,CH DOWN	1	
S7503	EVQ11G07K	SWITCH,STOP	1	
S7504	EVQ11G07K	SWITCH,CH UP	1	
S7505	EVQ11G07K	SWITCH,PLAY	1	
S7506	EVQ11G07K	SWITCH,REC	1	
S7507	EVQ11G07K	SWITCH,D2V	1	
S7508	EVQ11G07K	SWITCH,V2D	1	
W501	ERJ3GEY0R00V	1/10W 0	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
W502,03	ERJ6GEY0R00V	1/8W 0	2	
W504-06	ERJ3GEY0R00V	1/10W 0	3	
W507	ERJ6GEY0R00V	1/8W 0	1	
W508	ERJ3GEY0R00V	1/10W 0	1	
n	06	VEP09136B		(DIGITAL I/F P.C.B.)
C15001	EEUFM1C121B	16V 120U	1	
C15008	EEUFM1E221B	25V 220U	1	
C15009	ECJ2VF1C105Z	16V 1U	1	
C15010	F1J1H1030006	50V 0.01P	1	
C15011	ECJ2VB1H391K	25V 390U	1	
C15012	ECJ2VB1H472K	50V 4700P	1	
C15013	F1J1H102A623	50V 1000P	1	
C15015	F2A1A681A540	10V 680U	1	
C15017	EEUFM1E221B	25V 220U	1	
C15018,19	F1J1H104A578	50V 0.1P	2	
C15020	F1J1H103A702	50V 0.01P	1	
C15021	ECJ2VC1H181J	50V 180P	1	
C15022	F1J1H103A702	50V 0.01P	1	
C15024	F2A1A681A540	10V 680U	1	
C15025	EEUFM1E221B	25V 220U	1	
C15026,27	F1J1H104A578	50V 0.1P	2	
C15028	ECJ2VB1E473K	25V 0.047U	1	
C15029	ECJ2VC1H270J	50V 27P	1	
C15030	F1J1C334A091	16V 0.33U	1	
C15032	F2A1A681A540	10V 680U	1	
C15033	F1J1C105A091	16V 1U	1	
C31507	F2A1A2210063	10V 220U	1	
C31511	F1H1A105A028	10V 1U	1	
C31512	F1J0J106A014	6.3V 10U	1	
C31535	F1H1A105A028	10V 1U	1	
C31536	F1J0J106A014	6.3V 10U	1	
C31901	ECJ1VC1H102J	50V 1000P	1	
C33502	ECJ1VC1H561J	50V 560P	1	
C33503	F1J0J475A008	6.3V 4.7U	1	
C33504	F1H1C104A041	16V 0.1U	1	
C33506	F1H1C104A041	16V 0.1U	1	
C33507	F1H1C104A008	16V 0.1U	1	
C33735	ECEA0JKN470B	6.3V 47U	1	
C33738	F1H1H103A219	50V 0.01U	1	
C33740	ECEA0JKN470B	6.3V 47U	1	
C34003,04	ECEA1CKN100B	16V 10U	2	
C37001	F1H1C104A008	16V 0.1U	1	
C37104-07	F1H1H103A219	50V 0.01U	4	
C37507	ECJ1VB0J105K	6.3V 1U	1	
C37508	F1H1H103A220	50V 0.01U	1	
C37546	F1H1C104A008	16V 0.1U	1	
C37579-82	ECJ1VC1H100D	50V 10P	4	
C37583	F1H1H101A230	50V 100P	1	
C37584,85	ECJ1VC1H270J	50V 27P	2	
C37588	F1H1H103A220	50V 0.01U	1	
C37589	F1H1C104A008	16V 0.1U	1	
C37592,93	ECJ1VC1H100D	50V 10P	2	
C37595	F1H1C104A008	16V 0.1U	1	
C37596	F1H1H470A230	50V 47P	1	
C37597	F1H1H103A220	50V 0.01U	1	
C37598	F1H1H470A230	50V 47P	1	
C37599	F1H1C104A008	16V 0.1U	1	
C37600	F1H1H470A230	50V 47P	1	
C37601	F1H1C104A008	16V 0.1U	1	
C37602,03	F1H1H103A220	50V 0.01U	2	
C37604	F1H1C104A008	16V 0.1U	1	
C37607	F1H1C104A008	16V 0.1U	1	
C37609,10	F1H1H103A220	50V 0.01U	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C37626	F1H1H103A220	50V 0.01U	1	
C37633	F2A0J101A013	6.3V 100U	1	
C37636	ECJ1VF1A105Z	10V 1U	1	
C37652	ECJ1VF1A105Z	10V 1U	1	
C39001-03	F1H1H103A219	50V 0.01U	3	
C39010	F1H1C104A041	16V 0.1U	1	
C45001	F1H1C104A008	16V 0.1U	1	
C45003	ECQV1H104JL3	50V 0.1U	1	
C45004	F2A0J471A247	6.3V 470U	1	
C45005	F2A0J101A592	E-CAP	1	
C45006, 07	F1H1C104A008	16V 0.1U	2	
C45008	F2A1C101A699	16V 100U	1	
C45010	F2A1C470A698	16V 47U	1	
C45012	F2A1C470A698	16V 47U	1	
C45013	ECQB1H473JF3	50V 0.047U	1	
C45014	F2A1E4R7A641	25V 4.7U	1	
C45019, 20	F1H1H102A219	50V 1000P	2	
D15001	B0JCPE000015	DIODE	1	
D15002, 03	B0JCPD000021	DIODE	2	
D31501	B0EAKL000062	DIODE	1	
D37502, 03	MA2C165001VT	DIODE	2	
IC15002	C0DAAJG00007	IC	1	
IC15003	C0DBAKG00005	IC	1	
IC15004	C0DBAKG00007	IC	1	
IC31502	C0CBCBG00012	IC	1	
IC31510	C0CBCYE00001	IC	1	
IC37001	C0ABBA000146	IC	1	
IC37501	C2CBJG000547	IC	1	
IC37504	C0CBCBC00037	IC	1	
IC37505	C0EBE0000194	IC	1	
IC37508	C0EBH0000097	IC	1	
IC45001	C0DBAHD00013	IC	1	
IC45002	C0ABBB000119	IC	1	
IC45003	C0ABBA000054	IC	1	
IP15001	K5H3022A0013	IC PROTECTOR	1	⚠
IP37501	K5H5012A0010	IC PROTECTOR	1	⚠
K33502	ERJ3GEY0R00V	1/10W 0	1	
K37506, 07	ERJ3GEY0R00V	1/10W 0	2	
K37703	ERJ3GEY0R00V	1/10W 0	1	
K45004	ERJ3GEY0R00V	1/10W 0	1	
L15002	G0A220GA0026	COIL 22UH	1	
L15003	G0A330ZA0030	COIL 33UH	1	
L15004	G0A150ZA0030	COIL	1	
L15005	G0A220ZA0030	COIL 22UH	1	
L31501	G0A220ZA0030	COIL 22UH	1	
L37101	G0A100HA0023	COIL 10UH	1	
LB15003-06	J0JHC0000048	FILTER	4	
LB31505	J0JKB0000003	COIL	1	
LB33501	ERJ3GEY0R00V	1/10W 0	1	
LB33503,04	ERJ3GEY0R00V	1/10W 0	2	
LB34002	J0JCC0000103	COIL	1	
LB34003	ERJ3GEY0R00V	1/10W 0	1	
LB37101	J0JHC0000032	COIL	1	
LB37102-04	J0JCC0000103	COIL	3	
LB37105	J0JHC0000032	COIL	1	
LB37108,09	J0JHC0000032	COIL	2	
LB37409	J0JHC0000032	COIL	1	
LB37506-09	ERJ3GEY0R00V	1/10W 0	4	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
P12100	K1KA03AA0301	CONNECTOR(3P)	1	
P15001	K1KA16A00071	CONNECTOR(16P)	1	
P15003	K1KA04AA0180	CONNECTOR(4P)	1	
P31901	K1KA13A00074	CONNECTOR(13P)	1	
P31902, 03	K1KA19A00007	CONNECTOR(19P)	2	
P31905	K1KA07A00083	CONNECTOR(7P)	1	
P39702	K1KA88A00003	CONNECTOR(88P)	1	
PS37502	K1KB10B00045	CONNECTOR(FEMALE) 10P	1	
Q15001	B1DHED000008	TRANSISTOR	1	
Q15002, 03	B1DHDD000022	TRANSISTOR	2	
Q33503	2SB1218A0L	TRANSISTOR	1	
Q33504	2SD1819A0L	TRANSISTOR	1	
Q33505	2SB1218A0L	TRANSISTOR	1	
Q37001	2SD0874A0L	TRANSISTOR	1	
QR15001-05	UNR221300L	TRANSISTOR	5	
QR15007	UNR221300L	TRANSISTOR	1	
QR37501	UNR521300L	TRANSISTOR	1	
QR37502	UNR521200L	TRANSISTOR	1	
QR45006-09	UNR521100L	TRANSISTOR	4	
R15001	ERJ6GEYJ472V	1/8W 4.7K	1	
R15002	ERJ6GEYJ103V	1/8W 10K	1	
R15005	ERJ6GEYJ104V	1/8W 100K	1	
R15006	ERJ6RBD272V	1/10W 2.7K	1	
R15007	ERJ6RBD561V	1/10W 560	1	
R15008	ERJ6RBD102V	1/10W 1K	1	
R15010	ERJ6GEYJ513V	1/8W 51K	1	
R15011	D1BFR033A010	33	1	
R15012	ERJ6RBD272V	1/10W 2.7K	1	
R15013	ERJ6RBD123V	1/10W 12K	1	
R15014	ERJ6RBD472V	1/10W 4.7K	1	
R15015	D1BFR047A010	47	1	
R15016	ERJ6GEYJ333V	1/8W 33K	1	
R15017	ERJ6RBD562V	1/10W 5.6K	1	
R15018	ERJ6RBD152V	1/10W 1.5K	1	
R15019	ERJ6RBD392V	1/10W 3.9K	1	
R15026	ERJ6GEYJ103V	1/8W 10K	1	
R15027	ERJ6GEYJ472V	1/8W 4.7K	1	
R31501	ERJ3GEYF683V	1/10W 68K	1	
R31502	ERJ3GEY0R00V	1/10W 0	1	
R31503	ERJ3GEYF223V	1/10W 22K	1	
R31512, 13	ERDS2TJ271T	1/4W 270	2	
R33503	D0GB471JA041	1/10W 470	1	
R33504	ERJ3GEYJ102V	1/10W 1K	1	
R33505	ERJ3GEYG153V	1/10W 15K	1	
R33506	ERJ3GEYG152V	1/10W 1.5K	1	
R33507	ERJ3GEYJ103V	1/10W 10K	1	
R33508	ERJ3GEYG562V	1/10W 5.6K	1	
R33510	ERJ3GEY0R00V	1/10W 0	1	
R33511	ERJ3GEYJ102V	1/10W 1K	1	
R34002	ERJ3GEY0R00V	1/10W 0	1	
R34005	D0HB562ZA002	1/16W 5.6K	1	
R34006, 07	D0HB821ZA002	1/16W 820	2	
R34008, 09	D0HB392ZA002	1/16W 3.9K	2	
R34010	D0HB562ZA002	1/16W 5.6K	1	
R34011	D0GB221JA041	1/10W 220	1	
R37001	D0GB821JA007	1/10W 820	1	
R37003	D0GB183JA007	1/10W 18K	1	
R37004	ERJ3GEYJ103V	1/10W 10K	1	
R37501	D0GB101JA007	1/10W 100	1	
R37505	D0GB473JA041	1/10W 47K	1	
R37507	D0GB473JA041	1/10W 47K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R37508, 09	D0GB104JA007	1/10W 100K	2	
R37530-33	D0GB473JA041	1/10W 47K	4	
R37534-37	D0GB101JA007	1/10W 100	4	
R37538	D0GB472JA041	1/10W 4.7K	1	
R37540	D0GB472JA041	1/10W 4.7K	1	
R37541	ERJ3GEY0R00V	1/10W 0	1	
R37542	ERJ3GEYJ103V	1/10W 10K	1	
R37544, 45	D0GB221JA041	1/10W 220	2	
R37546-48	D0GB472JA041	1/10W 4.7K	3	
R37549	ERJ3GEYJ511V	1/10W 510	1	
R37550, 51	ERJ3GEYJ202V	1/10W 2K	2	
R37556-59	D0GB101JA007	1/10W 100	4	
R37561	D0GB392JA041	1/10W 3.9K	1	
R37569	D0GB101JA007	1/10W 100	1	
R37571, 72	D0GB101JA007	1/10W 100	2	
R37575	D0GB104JA007	1/10W 100K	1	
R37576-78	D0GB101JA007	1/10W 100	3	
R37583, 84	D0GB473JA041	1/10W 47K	2	
R37585	D0GB223JA041	1/10W 22K	1	
R37595, 96	D0GB473JA041	1/10W 47K	2	
R37597	D0GB153JA007	1/10W 15K	1	
R37600	D0GB153JA007	1/10W 15K	1	
R37604-06	ERJ3GEYJ822V	1/10W 8.2K	3	
R37611-13	D0GB101JA007	1/10W 100	3	
R37633	D0GB223JA041	1/10W 22K	1	
R45001	D0GB101JA007	1/10W 100	1	
R45002	D0HB202ZA002	1/16W 2K	1	
R45003	D0HB222ZA002	1/16W 2.2K	1	
R45004	D0HB183ZA002	1/16W 18K	1	
R45005	D0HB103ZA002	1/10W 10K	1	
R45006	D0GB473JA041	1/10W 47K	1	
R45007	D0HB183ZA002	1/16W 18K	1	
R45008	D0HB103ZA002	1/10W 10K	1	
R45009	D0GB473JA041	1/10W 47K	1	
R45014, 15	ERJ3GEYJ103V	1/10W 10K	2	
R45018, 19	ERJ3GEYJ102V	1/10W 1K	2	
W501,79	ERJ6GEY0R00V	1/8W 0	2	
W503	ERJ3GEY0R00V	1/10W 0	1	
W505	ERJ6GEY0R00V	1/8W 0	1	
W506 80-09	ERJ3GEY0R00V	1/10W 0	4	
W510-12	ERJ6GEY0R00V	1/8W 0	3	
W513,14	ERJ3GEY0R00V	1/10W 0	2	
W516	ERJ3GEY0R00V	1/10W 0	1	
W517	ERJ6GEY0R00V	1/8W 0	1	
W518,19	ERJ3GEY0R00V	1/10W 0	2	
W520	ERJ6GEY0R00V	1/8W 0	1	
W521	ERJ3GEY0R00V	1/10W 0	1	
X37501	H0D100500006	CRYSTAL OSCILLATOR	1	
n	07	VEP01964A		(POWER SUPPLY P.C.B.)
C11102	F1B2G1020002	1000P	1	⚠
C11103, 04	EEUED2E101YE	250V 100P	2	
C11105	ECQU2A683MLC	0.068U	1	⚠
C11106, 07	F1B2G4710001	100V 470U	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C11108, 09	F1B2G1010001	100V 100U	2	
C11110	ECQU2A223MLC	0.022U	1	⚠
C11201	F1B3A2220009	1000V 2200U	1	
C11202	F1J1H102A623	50V 1000P	1	
C11203	ECJ2VC1H101J	50V 100U	1	
C11204	EEUFM1V680B	35V 68U	1	
C11205	F1J1H103A702	50V 0.01P	1	
C11302	ECJ2VB1E104K	25V 0.1U	1	
C11303	ECJ2VB1E473K	25V 0.047U	1	
C11401	EEUFM1V221B	35V 220P	1	
C11402	EEUFM1V680B	35V 68U	1	
C11403, 04	F2A1C1520011	16V 1500U	2	
C11405	EEUFM1C471B	16V 470P	1	
C11501	EEUFM1E221B	25V 220U	1	
C11502, 03	F1J1H104A578	50V 0.1P	2	
C11504	ECJ2VB1E104K	25V 0.1U	1	
C11505	ECJ2VC1H181J	50V 180P	1	
C11506	F1J1H103A702	50V 0.01P	1	
C11507	F2A1A2210063	10V 220U	1	
C11509	ECJ2VB1E104K	25V 0.1U	1	
D11101	B0EBKT000008	DIODE	1	
D11103	B0AAGR000003	DIODE	1	
D11201	MAZ73000BC	DIODE	1	
D11203	B0AADM000003	DIODE	1	
D11205	MAZ80820ML	DIODE	1	
D11401, 02	B0JAMK000015	DIODE	2	
D11403	B0JBSG000009	DIODE	1	
D11501	B0JCPD000021	DIODE	1	
F11101	K5D202BK0005	FUSE	1	⚠
IC11201	C0DACZH00022	IC	1	
IC11301	C0DAEMB00003	IC	1	
IC11501	C0DBAKG00007	IC	1	
IP11501	K5H3022A0013	IC PROTECTOR	1	⚠
L11101, 02	G0B832L00001	COIL	2	
L11401	G0A220GA0026	COIL 22UH	1	
L11402	G0A100H00025	COIL	1	
L11403	G0A100HA0023	COIL 10UH	1	
L11501	G0A150ZA0051	COIL	1	
LB11101 ,02	J0JKB0000003	COIL	2	
LB11103	J0JHC0000048	FILTER	1	
LB11201	J0JHC0000048	FILTER	1	
LB11501	J0JHC0000048	FILTER	1	
P11001	K1KA16A00071	CONNECTOR(16P)	1	
P11101	K2AB2H000004	AC INLET	1	⚠
Q11301	B3PBA0000237	TRANSISTOR	1	
Q11501	B1DHDD000022	TRANSISTOR	1	
R11201	ERJ6GEYG273V	1/8W 27K	1	
R11202	ERJ6GEYG272V	1/8W 2.7K	1	
R11203	ERJ6GEYJ103V	1/8W 10K	1	
R11204, 05	ERJ6GEYJ470V	1/8W 47	2	
R11206	ERJ6GEYJ103V	1/8W 10K	1	
R11207	ERJ6GEY0R00V	1/8W 0	1	
R11208	ERJ6GEYG151V	1/8W 150	1	
R11209	ERJ6GEYG182V	1/8W 1.8K	1	
R11301	ERJ6GEYJ821V	1/8W 820	1	
R11302	ERJ6GEYJ102V	1/8W 1K	1	
R11303	ERJ6GEYJ562V	1/8W 5.6K	1	
R11304	ERJ6GEYJ103V	1/8W 10K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R11305	ERJ6GEYG912V	1/8W 9.1K	1	
R11308	ERJ6GEY0R00V	1/8W 0	1	
R11309	ERJ6GEYG621V	1/8W 620	1	
R11311	ERJ6GEYG273V	1/8W 27K	1	
R11312	ERJ6GEYG272V	1/8W 2.7K	1	
R11501	D1BFR0150001	15	1	
R11502	ERJ6RBD272V	1/10W 2.7K	1	
R11503	ERJ6RBD153V	1/10W 15K	1	
R11504	ERJ6RBD272V	1/10W 2.7K	1	
R11505	ERJ6GEYJ513V	1/8W 51K	1	
T11101	G4D3A0000166	TRANSFORMER	1	⚠
VA11101	ERZVA5V471	SURGE ABSORBER	1	
ZA11102	EYF52BCY	FUSE HOLDER	1	